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PUBLICATIONS

OF THE

VASSAR COLLEGE OBSERVATORY

No. 3

CAROLINE E. FURNESS, DIRECTOR

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PUBLICATIONS OF THE
VASSAR COLLEGE OBSERVATORY, No. 3

OBSERVATIONS OF VARIABLE STARS MADE DURING THE YEARS 1901-12

UNDER THE DIRECTION OF

MARY W. WHITNEY
DIRECTOR OF THE OBSERVATORY, 1888-1912

PREPARED FOR PUBLICATION BY

CAROLINE E. FURNESS
DIRECTOR OF THE OBSERVATORY

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TABLE OF CONTENTS.

PAGE.

1. Introduction 1
2. Instruments 2
3. Observers 3
4. Methods of Observation 3
5. Observing Program 5
6. Identification of Comparison Stars 6
7. Magnitudes of Comparison Stars 9
8. Photometric Observations 13
9. Results of Observations 14
10. Table I, Observations 17
11. Table II, Photometric Comparisons 201
12. Table III, Conversion of Hagen Grades into Harvard Magnitudes 207
13. Table IV, Observed Maxima and Minima and Comparison with Ephemeris 210
14. Miscellaneous Results 214
15. List of Publications 216

OBSERVATIONS OF VARIABLE STARS.

1.

Introduction.

The present publication contains the observations of variable stars made at the Vassar College Observatory under the directorate of Prof. Mary W. Whitney, 1888–1912. The earliest of these observations were made during the winter of 1894–5, but they were somewhat experimental in character and soon gave way to micrometric work consisting chiefly of observations of asteroids and comets. As Prof. Whitney had always retained her interest in variable stars, they were again placed on the observing program in 1901, and she continued working in this line until interrupted by illness in 1910. They were begun by the writer in 1909, and other contributions have been made from time to time by assistants and students connected with the Observatory. The results have been published at intervals in the *Astronomische Nachrichten,* and *Astronomical Journal,* generally in the form of "Maxima and Minima of Long Period Variables," but without including the individual observations. At the invitation of Prof. Pickering, many observations have been sent to the Harvard College Observatory, and together with those from other contributors have been published in *H. C. O. Annals,* vols. 57 and 63.

There still remained a large number of observations of variables which were not on the Harvard lists, and it seemed to the editor on taking charge of the Observatory in 1910, that these observations, though scattered among quite a large number of stars, were far too valuable not to be published. In preparing them for publication, it was found that the magnitudes of all of the comparison stars were in need of investigation, therefore all of the observations made up to Jan. 1, 1913, have been included, 4797 in all, whether they have been published elsewhere or not. In carrying out this plan an effort has been made to present the results in a shape which will make them as useful as possible to other workers. Two points in particular have been aimed at; first, to reduce all of the magnitudes to a uniform standard, that of the Harvard Photometry; second, to give the original observations with the exact identification of the comparison stars, thus making it possible to reduce them to any other desired photometric scale.

2.

Instruments.

The equipment of the Observatory is well suited to variable star observations, because it includes several equatorial telescopes of different apertures which can be used to supplement each other, the selection of the instrument depending upon the brightness of the star under observation.

The principal instrument is a twelve-inch equatorial. Next to this the one most in use is a five-inch Clark glass mounted with circles. This instrument, which was presented to the College by one of the alumnae, is an excellent one with fine definition. The shelter covering it has a gable roof, the two halves of which can be run off on tracks, leaving the sky entirely unobstructed. The advantage of this is obvious, when we consider the number of settings which must be made during an evening's work, and the different regions of the sky toward which the instrument is pointed.

In addition to these two instruments, the Observatory possesses a mounted four-inch telescope, and two portable three-inch telescopes. A third three-inch, the personal property of Prof. Whitney, was used by her during the summer months when the College was closed. It should be stated at this point that Vassar College is primarily a teaching institution, and opened during nine months of the year. During the three summer months it is not convenient to remain and use the mounted telescopes. This fact accounts for the gaps which frequently occur in the observations of some of the stars.

Brief mention should be made of the methods of co-operation between the observers with the twelve-inch and five-inch telescopes. When a star which was on the observing list for the five-inch became fainter than 11.5 or 12.0 mag., it was passed over to the observer with the twelve-inch and *vice-versa,* as stars became too bright for easy comparison with the twelve-inch, they were placed on the list for the five. This usually occurred when the bright comparison stars were some distance from the variable, thus requiring considerable motion of the telescope to pass from one star to the other. Occasionally when this happened, use was made of the finder of the twelve-inch, which itself has an aperture of three inches. The eyepiece on the five-inch magnified thirty diameters, and those used on the twelve-inch, either one hundred and seven, or two hundred.

In addition to the large instruments, field glasses, opera glasses, and a pair of Steinheil binoculars were used. Some observations were made with the finder of the five-inch and some with the naked eye.

3.

Observers.

The observers may be divided into two groups; astronomers regularly attached to the staff of the Observatory, and students. The latter would naturally be somewhat inexperienced, but they worked at first under careful supervision, and their results agreed well enough to be included with the others. It should be stated, however, that when they were discordant, they were rejected with a free hand.

The names of the observers with their abbreviations are in the following list: W, Mary W. Whitney, Prof. of Astronomy, Director of the Observatory, 1888–1912; F, Caroline E. Furness, Assistant in the Observatory, Associate Professor, 1911, Director, 1913; S, Psyche R. Sutton, graduate student, 1910, Assistant in Observatory, 1910–12; Wh, Jessamine White, Assistant in Observatory, 1912–13; Students: K, Constance Kretschmar; R, Martha Renner; Sw, Helen Swartz; T, Louise Taft; Wn, Ida Watson; Wi, Ida Whiteside.

4.

Methods of Observation.

The method of observation commonly employed was that known as the Argelander or step method, according to which the variable was compared with two stars, one brighter and one fainter. When the variable was invisible, it was customary to record the name of the faintest star visible. Various expressions were used to indicate that the variable was very faint, *e. g.*, the word "glimpsed" indicates that it was seen only occasionally. The expression, "on the limit," which is frequently used, signifies that it could be seen only with the greatest difficulty, and that nothing fainter could be seen. The magnitude indicated by this would depend on the instrument used, and the state of the atmosphere. It also meant that while the variable was not invisible, it was too faint for accurate comparison.

Sometimes the Harvard method of making estimates of relative brightness was used, instead of the step method of Argelander. For example, if *v* is half way between a and b in brightness, the comparison is written a5*v*5b. If, however, the variable divides the interval in brightness between a and b in some other ratio, it might be written thus, a3*v*7b. This method is particularly advantageous if the comparison stars a and b differ considerably in magnitude, because it is more accurate than to estimate the difference in steps, especially when the effort always is to make a step equivalent to as small a difference in magnitude as possible. Sometimes a variation of this method was used, as a3*v*4b or *v*3a3b, but this can readily be recognized because the letter *v* is not repeated as in the Argelander method.

Considerable difficulty was experienced in observing red stars. Following a suggestion of J. A. Parkhurst, the writer of late has made a practice of taking a full steady look at a red star, as was also the case with the comparison stars. This method seemed to increase the brightness of the red star and give rather better results than a cursory glance, since at first sight the red stars seemed fainter.

Each observer had her own observing book, in which the observations were recorded night by night as they were made. They were later copied into a ledger, in which two or three pages were reserved for each star. In the observing book were recorded the calendar date, and the hour and minute, if the variable was known to be of short period. For long period variables it was thought at first that the day of observation was sufficient, but in accordance with advice from Harvard, the time was later estimated to the tenth of a day, Eastern Standard Time. Unfortunately the earlier records did not supply the material for determining this, but as the observations were practically all made in the early evening before eleven o'clock, the fraction .4 day was used whenever the time was not recorded. This included the hours from 8.23 to 10.48 p.m. Comments on the condition of the sky were frequently made, as well as remarks on the accuracy of the observation itself.

In the ledger a space was left for the Julian Day and another for the magnitude deduced from the observation. There was also a place for the instrument and the observer. Unfortunately the instrument is also sometimes lacking, and can not be supplied nor inferred from the original record. Furthermore, the original records have not been preserved in all cases of the student observations, but as they have been copied into the final ledger, and as there were remarkably few mistakes in the other copying, it was decided to let them stand.

In the case of some of the short period variables, observations were begun soon after the announcement of their discovery, and before it was known that the periods were short, and hence the hour and minute are not noted. It was decided that these might be of negative value at least, hence they were not excluded, and the hour should be assumed to be between 7.00 and 10.30 p.m.

In determining the magnitudes resulting from the comparisons, it was assumed that one step was equal to one tenth of a magnitude, though some exceptions were made to this rule. With stars brighter than 7.0 mg. a step was taken to be equal to two tenths of a magnitude and the same seemed to be true of very faint stars, though constant practice tended to reduce the interval with the latter. In such cases the interval in brightness between the two comparison stars was divided according to the number of steps between them.

The magnitudes thus resulting were plotted for the most part, and the plots examined in order to discover markedly discordant observations. When any such were found, the original record was examined in order to see if there were anything to indicate that it was not of equal weight with the other observations. If this was found to be the case, it was rejected, but if nothing appeared in the record to invalidate it, it was allowed to stand. The fact that it did not fit the curve was not considered a sufficient reason for its rejection, since there are so many irregularities in the curves of long period variables.

Comparisons were also made with published collections of observations such as may be found in *H. C. O. Annals,* vols. 37, 57 and 63. Occasionally observations are included which are not quite accurate enough to give a good magnitude for the star, but which still might prove useful by showing that it must have been less than a certain magnitude.

During a portion of the time, a photometer was attached to the twelve-inch and comparisons were made with it. A full account of it will be found in Section 8.

5.

Observing Program.

In making out the observing program, several points were taken into consideration. Long period variables were much more extensively observed than short period variables, though the latter were by no means excluded from the list. Since the list of stars observed during ten years time is somewhat lengthy, it seems advisable to enumerate the reasons for their selection somewhat in detail.

1. A fairly large number was selected by Prof. Whitney from the principal ephemerides so that the stars might pass through a maximum during the period of observation. At first these predictions were taken from a list published by Chandler in *Ast. Jour.*, No. 560, but of late years they have been selected from Hartwig's tables in the *Vierteljahrsschrift*. This plan of observation would obviously require a long list of stars, partly because of their position in the sky, and partly because during the summer months when the three-inch telescope was in use, only bright stars could be observed. Furthermore the summer variables had to be easily identified because the telescope had no circles for setting. Observations of these stars were continued on either side of maximum as long as was possible.

2. The minima of many of these same stars were observed by the writer with the twelve-inch telescope. Additional stars were selected from Hartwig's list, the minima of which were marked unknown.

3. Many new variables were taken up from their announcement in the *Astronomische Nachrichten*, or the *Harvard Circulars*. Some of these turned out to be of short period or irregular.

4. SS Cygni and SX Draconis were observed more frequently than any other stars. The former was an easy object for the three-inch in the summer time, and the latter is an Algol variable which was discovered at this Observatory.

5. Several well-known variables which are bright at maximum were added from time to time, because they were particularly adapted to students and other beginners.

Recently this Observatory has co-operated with the Harvard College Observatory according to the plan announced in *H. C. O. Circular* 166.

6.

Identification of Comparison Stars.

The principal sources for the positions of the comparison stars were Hagen charts, *Durchmusterung* maps and Harvard photographs.

The most useful maps were those of Hagen, and, indeed, these are really indispensable to an observer who has a telescope large enough to show faint stars. Too much can not be said in praise of their accuracy. Probably we have used a hundred of his maps without finding a dozen mistakes in comparing them with the sky. Nevertheless, these have not been sufficient for comparison at times of minimum, and on many of them faint stars near the variable have been added. In order to identify these for later reference, particularly in regions where the stars were very numerous, recourse was had to the Parkhurst photographs. These are photographs of the Hagen regions made with the two foot reflector of the Yerkes Observatory and then enlarged. They give stars much below the limit of the twelve-inch and hence are absolutely reliable. In locating these stars it was impossible to use the micrometer on account of their faintness, hence they were inserted in the Hagen charts by alignment, as carefully as possible, and their positions read from the chart. Occasionally some of these faint stars were found in *H. C. O. Annals,* vol. 37 or 57, or in Parkhurst, *Researches in Stellar Photometry.* If they were taken from either of these sources a statement to that effect is explicitly made in the heading of the star. Examples: V Canis Minoris, Z Cygni.

Where the Hagen stars are used, their numbers are supposed to be a sufficient means of identification, and hence the positions are not given. Example: T Cassiopeiae.

It has not been our custom to use the original map at the telescope, but copies have been traced and mounted on heavy paper. This has enabled us to mark on them the numbers of the stars, and to write on the back any information necessary or convenient to the observer, such as lists of magnitudes, diagrams for finding with a small telescope, etc.

Harvard photographs were furnished by the Director of the Observatory to those who were co-operating in their plan of observation. These photographs were sometimes enlargements of the *Durchmusterung* maps, but more frequently were from direct negatives of the sky. On them were marked the magnitudes of the comparison stars by the assistants at the Harvard Observatory. The magnitudes and positions of these stars are to be found in *Annals,* vols. 37 and 57. Another set will be published shortly in *Annals,* vol. 63, which has not yet appeared at the time of writing. In the lists of the comparison stars which are found in these volumes, letters are used as the designations. These are not found on the photographs except in the case of faint stars for which the magnitudes had not been determined. While the original observations at this Observatory were frequently made with the direct use of the magnitude, the letter of the star has usually been given in order to facilitate its identification, in case it should be necessary later to change the scale of magnitude. Example: RS Ursae Majoris. In the few cases, about twelve in number, where the magnitudes appear directly in the comparison, it is possible to identify the stars by referring to the lists mentioned above. Example: RW Andromedae.

It might be stated at this point, that it has not been considered necessary by the editor to have the comparison stars designated in a uniform manner. The method originally adopted by the observer has been followed as far as possible, unless an early map like a *Durchmusterung* map has been superseded by a Hagen or Harvard set of comparison stars. It was thought that if the position and designation of the comparison stars were made clear, the desired end had been attained.

Occasionally, as with the Hagen maps, some comparison stars have been used other than those on the Harvard list. This happened when an intermediate magnitude was desired, but more often when a *Durchmusterung* map had been used, and the Harvard photograph had appeared later. These stars were then measured on the photograph, the difference in right ascension and declination being found from those of known stars near by. Sometimes, if the star was bright enough its position was found by micrometer measurements. Examples: T Ursae Minoris, RS Cassiopeiae.

For a large number of stars, expecially for those which were added to the observing list immediately after discovery, a *Durchmusterung* map was used and additional stars were added by the observer as necessity required. Their positions were usually found by micrometer observations, the positions of all being given for 1900. In bringing the *Durchmusterung* stars up to this date, they were identified as far as possible in the Gesellschaft catalogs, but if they did not occur in them, the precession as found in the *Durchmusterung* was used. In locating the additional stars, micrometer observations were made if the star was bright enough to permit it. A square bar occulting micrometer was used, such as is described by S. C. Chandler in the *Memoirs of the American Academy of Arts and Sciences,* vol. XI, since this does not require any illumination. Quite accidentally it was found that the filar micrometer could be used for stars as faint as

13.3 mg. and this was used thereafter. For stars fainter than this, the filar was set as closely as possible and the light flashed in and out to see if the position could be improved. Sometimes the faintest stars were located by alignment on diagrams, and the positions read from them. Example: S Geminorum.

In every case where the positions of the comparison stars were determined at this observatory, a plot was made to a scale on cross section paper. This plot was compared with the original drawing and with the sky, in order to detect possible errors. No doubt some of the comparison stars might have been found in the Astrographic catalogs, but it took less time to observe them directly than to find them in the catalogs and deduce their positions, particularly as there were always some stars in each region which were not found in the catalogs.

Where only *Durchmusterung* stars were used for comparison, it was considered sufficient to give the number without reducing to 1900. Example: RV Camelopardalis.

Occasionally maps by other observers have been published in the *Astronomische Nachrichten,* and have been adopted by us or were used for comparison. Examples: RR Persei, RU Andromedae.

It was hoped that the Wolf-Palisa charts would be of considerable assistance, but an examination of them proved a little disappointing. While they contain fainter stars than can be seen with the twelve-inch telescope, the scale is so different from those of the Hagen or *Durchmusterung* charts that they would have required re-drawing on a larger scale to be of use with the telescope. Besides, not a great many of them have appeared, and only a few of the variables have been found on them. They have been used only in a few cases. Example: U Cancri.

7.

Magnitudes of Comparison Stars.

By far the most difficult part of the work and the part which has taken the longest time is the determination of the magnitudes of the comparison stars, and their reduction to a homogeneous system. For many reasons it seemed best to adopt the standard of the Harvard Photometry, and hence it became necessary to find a method of connecting other scales with this.

However, before giving in detail the methods of reducing the magnitudes of other observers to the Harvard scale, it will be necessary to explain fully the method of determining the magnitudes of the very faint stars, since the lower end of a curve connecting the two scales was frequently affected by their values. Furthermore, since the editor has made a special point of observing long period variables at minimum, and was accustomed to follow them to the very limit of visibility, it became necessary to have a definite scale for the stars ranging from 13.0 to 14.2 mg., which latter was supposed to be the theoretical limit for the twelve-inch telescope. The Hagen catalogs rarely went as low as this, and the Harvard lists very frequently did not give exact magnitudes below 13.5. Sometimes the faintest Harvard magnitudes did not agree with those obtained from observation on the supposition that the lower limit for the Vassar telescope was 14.2. Consequently it became necessary to devise some method which would ensure a certain degree of uniformity.

Upon investigation it was found that the only photometric work on faint stars made with a large telescope was contained in Parkhurst, *Researches in Stellar Photometry.* His observations were made with a wedge photometer attached to the forty-inch telescope of the Yerkes Observatory. The magnitudes in his tables are based on the Harvard scale and also on the Potsdam scale.

After some experimentation it seemed the best plan to standardize the eye of the observer. In order to carry this out, a careful study was made of the Parkhurst comparison stars for V Delphini which was then in excellent position for observation in the spring of 1912. This was done only when the atmospheric conditions were of the best. As a result, it was found that a 14.0 mg. star could be glimpsed frequently without much difficulty, while a 14.2 mg. star could be seen only with the greatest effort. A study was also made of all the magnitudes below 12.8, in order to fix in the mind so far as possible, the absolute brightness of stars of magnitude 12.8, 13.0, 13.3, 13.5, and 13.8, and considerable confidence in the power to estimate these magnitudes directly was finally acquired.

In making these estimates, particular care was taken by the observer to keep the eye protected. The right eye was used for making the estimate and then closed while the left eye was used for making the record. Thus the right eye received only the light from the field or the darkened room and was not exposed to a bright light. A very marked difference in the darkness of the telescopic field resulted from this practice owing to the decrease in sensitiveness of the left eye.

Fortunately this was not a permanent weakening, for in the daytime equality was restored.

At the same time that the magnitudes of the faint stars were estimated directly, comparisons among them were made by the step method and it was found that the derived results in most cases agreed remarkably with the estimates. While engaged in this work, observations were made on different evenings, the observer being unaware of previous estimates. In fact, it would have been quite difficult to take cognizance of them, for the observing list was quite long, and the record was made chronologically, with no reference to previous dates of observation.

In passing, the editor wishes to state that as the result of still further experience in making estimates, she is confirmed in her opinion that it is possible to standardize the eye as described above, provided that the place and the instrument remain the same. A change in the aperture of the instrument would require the formation of a new standard.

Returning to the general problem of connecting other scales with the Harvard photometric scale, it was found, fortunately, that provision already had been made for the Hagen stars, though the procedure is different for the different series. The material is found in the Harvard *Annals,* vols. 37 and 57. Below are given the dates of publication of the volumes most used.

Hagen Series I, 1899, *H. C. O. Annals,* vol. 37, pt. 1, 1900.
Hagen Series II, 1899, *H. C. O. Annals,* vol. 37, pt. 2, 1902.
Hagen Series III, 1900, *H. C. O. Annals,* vol. 57, pt. 1, 1907.
Hagen Series IV, 1907, *H. C. O. Annals,* vol. 57, pt. 2, 1908.
Hagen Series V, 1906, *H. C. O. Annals,* vol. 55, pt. 1, 1906.
Hagen Series VI, 1908, *H. C. O. Annals,* vol. 55, pt. 2, 1909.

In the first three series, Hagen gives the grade for each comparison star and its magnitude according to his own scale. Volume 37, part 2, of the *Annals* gives several tables by means of which the Hagen stars may be identified in the Harvard lists, and also a table, No. XVIII, which gives the Harvard magnitude for every tenth grade of Hagen. The numbers in the latter table were obtained by plotting the Hagen grades as abscissas, and the Harvard magnitudes as ordinates, and drawing smooth curves through the points. It is hardly necessary to say that the magnitudes were taken for stars which were common to both lists. The number of stars in the Hagen catalog always exceeded the number in the Harvard list, and hence the magnitudes of the intervening stars could be obtained by interpolating for the Hagen grade, or when necessary by extrapolation. Example: S Cassiopeiae.

Occasionally, difficulties occurred on account of the magnitudes of the faint stars. Sometimes they differed from those obtained by direct estimation with the twelve-inch telescope, and sometimes Table XVIII gave a fainter magnitude than could be observed. Hence the curves were reconstructed, using the Hagen grades as abscissas, with Harvard magnitudes for the upper part of the curve, and Vassar magnitudes for the lower part. Whenever this was done it is so stated in the heading of the star, and the co-ordinates of the curve are given in Table III, at the end of this volume. Example: R Andromedae.

Sometimes, Table XVIII failed to give the Harvard magnitudes for the brightest Hagen stars. In such cases the magnitudes could always be found in one of the volumes of the Harvard photometric observations. Example: R Andromedae.

Unfortunately, Table XVIII does not contain all of the stars which are contained in Hagen series I, II and III. Comparison stars for the missing ones are to be found in *Annals*, vol. 57, pt. 2, Table XV, with their magnitudes given according to the Harvard Photometric scale. Curves were constructed for all of these stars, as described above, using Hagen grades and Harvard magnitudes, and the final magnitudes were taken from the curve. The co-ordinates of the curves are to be found in Table III. Example: R Aquilae. Here again, it was sometimes necessary to alter the lower end of the curve in order to make it accord with observations with the telescope. Example: RR Cassiopeiae.

For Hagen Series IV another method was used. Prof. Pickering had determined the photometric magnitudes of certain of the comparison stars and had sent them in advance to Father Hagen, who then proceeded to construct curves as described above. Therefore the magnitudes published by him in his column "Magn." are already on the Harvard scale and were adopted without change. The Harvard magnitudes of the standard stars were later included in *Annals*, vol. 57, pt. 2. As the number of the Hagen series is given in the heading for each star, whenever "IV" is used, and no other statement is made, it may be understood that the Hagen magnitudes were adopted. Example: Y Persei.

For the few exceptional cases in this series, explanations are given in the headings.

For Hagen Series V, the column "HP" gives the magnitudes on the Harvard scale, and the values from it were adopted. Example: η Aquilae.

The same method was used for Series VI. Example: V Andromedae. However there were a few stars in Series VI in which the magnitudes of the faint stars did not seem to agree with the observed values, and the curves were re-drawn using Vassar magnitudes for the lower end. Example: Y Aquarii.

The magnitudes of the standards from Harvard as given in the Hagen catalogs and as published later in Vol. 57 do not always agree exactly, but the differences are seldom more than one tenth of a magnitude, and hence would not alter the course of the curve.

When additional stars were used which were not in the Hagen lists, their magnitudes were usually found by comparison with known stars. In each case, the heading states plainly the method employed.

For variables which were not on the Hagen or Harvard lists, the magnitudes of the comparison stars were determined by the step method, using as a basis such stars in the neighborhood as could be found in the various volumes of the Harvard Photometry. The lower end of the scale was always found by estimating directly the magnitudes of the fainter stars. Example: RU Ursae Majoris. The method employed is similar to that described by Parkhurst, *Popular Astronomy*, vol. I, p. 212.

There were six stars for which it was impossible to find suitable Harvard standards. The headings state what method was adopted in determining them. Examples: RZ Pegasi, Z Leonis.

8.

Photometric Observations.

During the years 1903–1905 a wedge photometer was used by Prof. Whitney attached to the twelve-inch telescope. The instrument is similar to that sent to the Yerkes Observatory by Prof. Pickering, and is described by Parkhurst in the *Astrophysical Journal*, vol. XIII, p. 249. The constant of this wedge was determined by Prof. Whitney by settings on thirty-three pairs of stars, twenty-two in the Pleiades, six from the Potsdam *Photometrische Durchmusterung*, one from the

Harvard Photometry, and four in Coma Berenices, from *A. N.*, 3841, in which the magnitudes are given by Frau von Prittwitz. The observations were made during March, April and May, 1903. The constant was found to be 0.0907 mg.

The photometer was used primarily for short period variables, though on evenings when it was attached to the telescope, long period variables were also observed with it. Its use was finally discontinued because Prof. Whitney found that the artificial star did not resemble the real star sufficiently well. Furthermore, short period variables require several hours of consecutive observation, and as the observing hours usually lasted only as late as eleven or occasionally to twelve, on account of daytime duties, its use was finally discontinued. For long period variables, the Argelander method seemed equally satisfactory.

In publishing the photometric comparisons, Table I gives only the name of the star used. Table II contains the scale readings in full. Usually the magnitude is given only to tenths, but in one or two cases, where the series is especially exact, it is given to hundredths, as in Z Draconis. For short period variables, the hour and minute is given wherever the record is complete, but if it is lacking, the fraction 0.4 day is used.

For SS Cygni, the time is given to hundredths of a day.

9.

Results of Observations.

The magnitudes resulting from the observations were determined by assuming that one step was equal to one tenth of a magnitude, as previously described under "Method of Observation." They were then plotted and wherever the observations were sufficiently grouped to permit, the times of maxima and minima were determined by the customary method of bisecting the chords. Comparisons were then made with the ephemerides as predicted from the elements given by Hartwig in the *Vierteljahrsschrift* for 1913. Table IV gives the resulting values together with the quantities "O–C" wherever they could be determined.

There were some cases in which the observations were too scattered to permit the determination of a maximum or minimum, but which showed, nevertheless, a wide divergence from the predicted values. These are mentioned separately after Table IV. In the same place will be found stars which have peculiar curves or for which important facts have been discovered.

It would be somewhat difficult to separate the work of the different observers who have co-operated in this publication. The plan of observing variable stars was due entirely to Prof. Whitney. She selected the variables, picked out the comparison stars, and drew the additional maps for the *Durchmusterung* charts. Under her direction students from time to time took up the work and contributed their observations. Others assisted in tracing maps, identifying stars, and reducing magnitudes. She was the only one to use the photometer. The present writer began observing in 1909, and from the beginning paid especial attention to faint stars. Consequently many of the fainter comparison stars were inserted in the maps by her.

The work of editing the observations was begun in November, 1911. Since that time the magnitudes of the comparison stars have been re-determined and reduced to the Harvard standard, the positions of all of the comparison stars not already found in the Hagen or Harvard catalogs have been determined, all of the observations have been compared with the original records and the resulting magnitudes have been re-determined.

In conclusion the editor wishes to express her appreciation of the labors of those who have assisted in carrying on this investigation. The main part of the computing has been in the hands of Miss Helen Van Kleek, whose patience and accuracy have made the work possible in its present complete form. She had charge of the revision of the observations, deduced the magnitudes of the comparison stars from the tables and observations with excellent judgment, obtained the resulting magnitudes of the variables, plotted the observations, and compared them with those published elsewhere. Miss Psyche R. Sutton, assistant 1910–12, reduced the micrometer observations which were made for the purpose of locating the comparison stars, and selected the Harvard standards for the *Durchmusterung* maps. Miss Jessamine White, assistant 1912–13, has determined the times of maximum and minimum from the curves and has made the comparison with the ephemeris. The telescopic observations required for the magnitudes and positions were all made by the editor who is solely responsible for the published results.

The editor takes this opportunity of expressing the thanks of Prof. Whitney and herself for the valued assistance rendered by Prof.

Pickering in providing the photographic charts for many variables which have proved of great usefulness.

Most grateful appreciation is also due to Mrs. Mary Thaw Thompson, an alumna of Vassar College, who by her generous help has made it possible to carry this work to completion and to provide for its publication.

CAROLINE E. FURNESS.

VASSAR COLLEGE,
June, 1913.

TABLE I.

THE OBSERVATIONS.

The heading for each star contains its name, the Harvard number designating it and the number of the Hagen series in which it is found. If this latter number is lacking, the star has no Hagen chart. The second line gives the position for 1855. This is followed by a description of the method of identifying the comparison stars and of determining their magnitudes. The observations follow in tabular form.

The columns in order give the calendar date, the Julian Day and fraction expressed in Eastern Standard Time, the instrument used, the observer, the comparisons, the resulting magnitude, and remarks.

Abbreviations employed: cl., clear; diff., difficult; ft., faint; gibb., gibbous; h., hazy; hor., horizon; im., images; lim., limit; l., low; lr., lower; merid., meridian; m., moon; O., Ohio; prob., probably; trans., transit; v., very.

The word *Annals* refers to the *Annals* published by the Harvard College Observatory.

TT CASSIOPEIAE 000454

1855.0; α $0^h\ 2^m\ 36^s$; δ $+54° \ 4'.4$.

Comparison stars; a *Durchmusterung* map was used with additional stars. Since the variable does not rise above 10.0 mg. at maximum, only faint stars were necessary for comparison. As there were no suitable Harvard stars for standards in the neighborhood, the magnitudes were determined by estimation and intercomparison. The agreement was very satisfactory. The positions were determined by measurements on a Harvard photograph.

Des.	Mag.	α 1900	δ 1900
h	10.8	$0^h\ 6^m\ 24^s$	$+54°\ 14'.7$
l	11.4	5 42	17.9
k	12.3	5 34	18.7
m	12.5	5 3	20.2
p	12.8	4 47	17.8
n	12.9	4 51	18.7
r	13.4	4 42	14.9

Date	J. D.	Inst.	Obs	Comparisons	Adopted value	Remarks
1908	241					
Nov. 21	8267.4	5	W	11.5 ± seen near pos. (this was probably *v*)	11.5±	
Dec. 18	8294.4	5	W	*v* barely seen, est. 12.0 ±	12.0 ±	
1909						
Jan. 26	8333.4	12	W	*v* estimated 12.0 ±	12.0 ±	
Oct. 16	8596.4	12	F	*v* = l	11.4	
Nov. 29	8640.4	12	F	*v* = p; *v* 2 n; m 3 *v*	12.8	
Dec. 11	8652.4	12	F	n 2 *v*	13.1	
1910						
Jan. 7	8679.4	12	F	r 4 *v*	13.8	*v* faint
Feb. 1	8704.4	12	F	*v* not seen, est. <14.0	<14.0	fine seeing
" 10	8713.4	12	F	*v* on limit, est. <14.0	<14.0	uncertain
" 25	8728.4	12	F	*v* not seen; n faintest seen	<12.9	
Mar. 3	8734.3	12	F	*v* on limit, est. 14.0	14.0	fine seeing
" 26	8757.3	12	F	*v* not seen; r faintest seen	<13.4	
Oct. 3	8948.4	12	F	*v* = l	11.4	
" 28	8973.3	12	F	*v* = l	11.4	cloudy
Dec. 2	9008.4	12	F	*v* 2 m; l 5 *v*; *v* 1 k 1 m	12.1	
" 3	9009.4	12	F	l 3 *v* 2 k	11.9	
1911						
Jan. 5	9042.3	12	F	p 2 *v*; n 0.5 *v*; m 4 *v*	13.0	
" 24	9051.3	12	F	p 4 *v*; *v* = r	13.3	
Feb. 15	9083.3	12	F	*v* on limit, est. 14.0	14.0	very faint
" 21	9089.3	12	F	*v* est. 13.8–14.0; *v* < r	13.9	*v* on limit
Apr. 18	9145.4	12	F	*v* not seen; r faintest seen	<13.4	lr. trans.
1912						
Jan. 19	9421.4	12	F	*v* 2 k 2 m	12.1	
" 25	9427.3	12	F	k 2 *v*; *v* 1 m	12.4	im. poor, m.
Feb. 8	9441.3	12	F	n 2 *v*; *v* 4 r	13.0	very clear
Oct. 18	9694.3	12	F	r 2 *v*	13.6	ft. in m.
" 30	9706.4	12	F	r 4 *v*; *v* est. 13.8	13.8	

X ANDROMEDAE 001046 VI

1855.0; α $0^h\ 8^m\ 33^s$; δ $+46° 12'.4$.

Comparison stars; Hagen numbers used, with one additional faint star, o, mg. 13.0, *Annals*, vol. 57, p. 223. The magnitudes of the Hagen stars are taken from the Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs	Comparisons	Adopted value	Remarks
1909	241					
Oct. 9	8589.4	5	W	*v* = 52	11.8	
" 16	8596.4	12	F	*v* = 55 = 56	12.0	
Nov. 9	8620.4	12	F	*v* 2 72; *v* 2 69	12.6	
Dec. 1	8642.4	12	F	72 3 v	13.1	
1910						
Jan. 7	8679.4	12	F	*v* < 72	<12.8	cloudy
" 8	8680.3	12	F	*v* very faint, est. 13.8–14.0	13.9	
Feb. 4	8707.4	12	F	*v* not seen; 72 and o seen	<13.0	poor
" 12	8715.4	12	F	*v* not seen; < 13.0	<13.0	
" 25	8728.4	12	F	*v* not seen; 56 seen	<12.0	m.
Mar. 3	8734.3	12	F	*v* on limit, est. 14.2	14.2	v. clear

T ANDROMEDAE 001726 III

1855.0; α $0^h\ 14^m\ 50^s$; δ $+26^\circ\ 11'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from Table XVIII, *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Dec. 9	6824.4	5	W	$v=13$	10.4	
" 21	6836.3	5	W	4 4 v; 5 3 v; v 3 6	9.5	
1905						
Jan. 14	6860.3	5	W	3 4 v; v 3 4	8.9	
" 18	6864.4	5	W	3 4 v; v 5 4	8.8	m. h.
" 23	6869.3	5	Wi	v 3 4; 2 4 v	8.6	
" 30	6876.3	5	Wi	2 5 v; v 2 4	8.7	
Feb. 7	6884.3	5	Wi	3 8 v; 5 3 v; v 4 11	9.7	
" 13	6890.3	5	Wi	4 3 v; v 8 13	9.4	
" 24	6901.3	5	Wi	$v=10$; 6 3 v	10.0	
Mar. 15	6920.3	12	W	v not seen; 16 just seen	<10.6	
1907						
Oct. 14	7863.4	5	W	v not seen; 26 glimpsed	<12.0	m.
Nov. 4	7884.4	4	W	v not seen; 33 seen	<12.6	
" 8	7888.4	12	W	v barely seen; <33	<12.6	h.
1908						
Jan. 13	7954.4	12	W	v 4 5; 43 v	9.2	m.
1912						
Jan. 24	9426.4	5	S	2 2 v; v 2 3	8.4	
Feb. 6	9439.4	5	S	4 3 v; v 8 13	9.4	

T CASSIOPEIAE 001755 III

1855.0; α $0^h\ 15^m\ 25^s$; δ $+54^\circ\ 59'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Feb. 11	6887.4	12	W	$v = 5$	7.9	
Mar. 18	6923.3	12	W	phot. comp. with 5 and 6	7.6	
Apr. 17	6953.3	—	W	3 4 v	7.9	low, hazy
1906						
Mar. 5	7275.4	12	W	$v = 10$	8.6	
Aug. 9	7432.4	3	W	$v = 10$	8.6	
Sept. 15	7469.4	5	W	10 4 v; v 5 16	9.2	
Oct. 16	7500.4	5	W	$v = 20$; v 2 22	10.0	
Nov. 7	7522.4	5	W	28 2 v; $v = 31$	11.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Jan. 20	7596.4	12	W	$v = 31$	11.1	
" 30	7606.4	12	W	v 3 31; 28 = v	10.8	moon
Mar. 11	7646.4	12	W	v 1 21	10.1	
Apr. 5	7671.4	12	W	v 3.5 20; v 1 16	9.8	hazy
Aug. 4	7792.4	3	W	$v = 5$	7.9	
" 8	7796.4	3	W	6 1 v; v 3 10	8.2	
" 18	7806.4	3	W	$v = 5$; 2 5 v; v 5 6	7.7	
" 28	7816.4	3	W	v 2 6; 3 2 v	7.8	
Sept. 12	7831.4	5	W	3 3 v; v 4 7	7.8	
Oct. 15	7864.4	5	W	v 4 10; $v = 6$	8.2	
Nov. 1	7881.4	4	W	$v = 10$	8.6	
1908						
Jan. 24	7965.4	5	W	v 5 31; 20 3 v	10.5	
" 31	7972.4	12	W	v 3 31; 27 1 v	10.8	
Feb. 11	7983.4	12	W	v 4 31; $v = 28$; 27 2 v	10.8	moon
Mar. 3	8004.4	—	W	v 2 43; 31 3 v	11.6	
" 16	8017.4	12	W	31 4 v; v 5 43	11.4	moon
" 25	8026.4	12	W	$v = 37$; v 2 43; 31 3 v	11.5	
Apr. 3	8035.4	12	W	43 0.5 v	12.0	
Nov. 23	8269.4	5	R	10 2 v	8.8	
Dec. 1	8277.4	5	R	6 3 v; v 1 10	8.4	
" 10	8286.4	5	R	v 1 5; v 1 6; 3 2 v	7.8	
1909						
Jan. 21	8328.4	5	W	v 3 10; 9 2 v	8.4	
Feb. 18	8356.4	5	R	$v = 10$	8.6	
" 22	8360.4	5	R	10 3 v; v 5 16	9.2	
1912						
Jan. 25	9427.3	12	F	$v = 43$	11.9	
Feb. 12	9445.3	12	F	31 6 v; v 3 43	11.6	

R ANDROMEDAE 001838 III

1855.0; α $0^h\,16^m\,25^s$; δ $+37°\,46'.4$.

Comparison stars; Hagen numbers used. Although this star is found in Table XVIII of *Annals*, vol. 37, the magnitudes of the faintest stars obtained therefrom did not seem to accord with the observations. Therefore a new curve was drawn by combining the observed magnitudes of stars 48, 49, 53, 54, 55, with the magnitudes of the other stars found in vol. 37, Table XIV, p. 151. The magnitudes used were obtained from this curve, the co-ordinates of which will be found in Table III. The magnitudes of stars 1, 2, 3, for which no Hagen grades are given, are as follows: 1, mg. 5.20, *Annals*, vol. 50; 2, mg. 7.04, *Annals*, vol. 54; 3, mg. 7.00, *Annals*, vol. 54. One additional star was used, f, taken from *Annals*, vol. 37, p. 151, having magnitude 7.77, *Annals*, vol. 54.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
Oct. 19	5677.4	5	W	6 1 v	8.6	
" 30	5688.3	5	W	v 5 5; 2 5 v	7.7	
Nov. 2	5691.3	5	W	3 6 v	7.6	
" 2	5691.3	1	W	v 2 f	7.6	finder used
" 2	5691.3	1	Wn	3 5 v; v 2 f	7.6	finder used
" 6	5695.4	5	Wn	3 3 v;	7.3	
" 8	5697.3	1	Wn	3 1 v	7.1	finder used
" 12	5701.4	1	Wn	3 2 v	7.2	finder used
" 17	5706.4	–	Wn	3 3 v	7.3	opera glass
" 19	5708.4	1	Wn	1 5 v; v 3 3	6.3	finder used
Dec. 4	5723.3	1	Wn	v 4 3	6.6	finder used
1902						
Jan. 4	5754.4	3	W	v 1 3; 1 4.5 v	6.7	finder used
" 11	5761.4	5	W	v 2.5 3; 1 6 v	6.4	
" 13	5763.3	–	Wn	3 2 v; v 3 f	7.3	field glass
" 16	5766.3	–	Wn	3 3 v	7.3	field glass
" 25	5775.3	–	Wn	3 4 v	7.4	opera glass
" 25	5775.4	1	Wn	3 4 v	7.4	finder
" 28	5778.3	1	Wn	3 3 v	7.3	finder
" 30	5780.3	–	Wn	3 4.5 v	7.4	opera glass
Feb. 4	5785.3	1	Wn	v 0.5 f	7.8	finder used
" 5	5786.3	1	Wn	v 1 f	7.7	finder used
" 10	5791.3	1	Wn	f 1 v	7.9	finder used
July 12	5943.5	12	W	55 4.5 v; 54 3.5 v	14.1	
Nov. 4	6058.3	12	W	$v = 37$	11.7	
Dec. 1	6085.4	5	W	5 2 v; v 5 13; $v = 6$	8.7	
1903						
Jan. 10	6125.3	3	W	v 4.5 3; 1 5 v	6.1	moon
Feb. 14	6160.3	3	W	v 0.5 2	7.0	
Sept. 16	6374.4	12	W	v not seen; 55 seen faintly	<13.8	
" 21	6379.4	12	W	v not seen; 55 seen	<13.8	
Oct. 24	6412.4	12	W	v barely glimpsed; 55 seen faintly	<13.8	
Dec. 15	6464.4	12	W	$v = 17$	9.7	
" 15	6464.4	12	W	phot. comp. with 17	9.7	
1904						
Jan. 15	6495.4	12	W	v 3 3	6.7	
Feb. 3	6514.4	12	W	1 5 v; v 5 3	6.1	
1905						
Feb. 15	6892.4	—	W	v 5 8; 6 2 v	8.6	moon
1906						
Jan. 16	7227.4	12	W	$v = 45$	12.5	
1910						
Nov. 11	8987.4	5	S	$v = 3$	7.0	
" 19	8995.4	5	S	v 3 3; $v = 2$	6.8	
Dec. 8	9014.4	5	S	$v = 3$	7.0	
1911						
Jan. 5	9042.4	5	S	3 6 v; v 5 5	7.8	
" 23	9060.4	5	S	$v = 8$	8.9	
Feb. 21	9089.4	5	S	17 1 v; v 4 25	9.8	
1912						
Feb. 23	9456.3	12	F	3 4 v; v 6 5	7.6	

Y CEPHEI 003179 VI

1855.0; α $0^{h}\ 28^{m}\ 18^{s}$; δ $+79^{\circ}\ 33'.5$.

Comparison stars; Hagen numbers and Harvard photograph used, magnitudes for Hagen stars taken from Hagen catalog, column H. P., p and q estimated 13.5 mg.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Feb. 21	9089.3	12	F	*v* not seen; 41 seen easily	<13.1	fine seeing
Apr. 18	9145.4	12	F	37 1 *v*; *v* 2 40	12.8	
" 29	9156.4	12	F	17 4 *v* ; *v* = 27	11.8	poor seeing
May 18	9175.4	12	F	*v* 6 15; *v* 2 13	10.1	
" 26	9183.4	12	F	7 2 *v*; *v* 8 13	9.5	
Nov. 16	9357.4	12	F	*v* not seen; p and q seen est. < 13.5		
Dec. 7	9378.3	12	F	*v* not seen; 28 and 32 seen	<12.4	

U CASSIOPEIAE 004047 III

1855.0; α $0^{h}\ 38^{m}\ 16^{s}$; δ $+47^{\circ}\ 27'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 223. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Feb. 10	6887.4	12	W	40 3 *v*; *v* = 51	11.4	
" 25	6902.3	—	W	*v* 2 22; 5 7.5 *v*	9.7	
Mar. 10	6915.4	12	W	*v* 3 5	8.5	
Oct. 4	7123.4	5	W	*v* not seen; 51 and 65 seen	<12.3	
Nov. 20	7170.4	—	W	*v* = 25; 22 3 *v*	10.3	
Dec. 12	7192.4	—	W	*v* 6 5; *v* 4 4; 3 1 *v*	8.3	moon
" 26	7206.4	5	W	*v* 1 3	8.3	
1906						
Jan. 9	7220.4	3	W	*v* 3 5; *v* = 4	8.5	finder used
Aug. 12	7435.4	3	W	*v* not seen; 40 seen	<11.0	
Sept. 14	7468.4	5	W	5 1 *v*; *v* 4 7	8.8	
Oct. 16	7500.4	5	W	5 5 *v*; *v* 6 22; *v* 2 20	9.5	
Nov. 5	7520.4	—	W	*v* 2 22	9.9	
1907						
Jan. 20	7596.4	12	W	*v* not seen; 75 seen; 81 caught	<12.8	
" 30	7606.4	12	W	*v* not seen; 75 barely caught	<12.5	
Mar. 11	7646.4	12	W	*v* not seen; 75 seen, low	<12.5	
Apr. 5	7671.4	12	W	*v* not seen; 51 seen, low	<11.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Oct. 5	7854.4	5	W	*v* not seen; 75 seen	<12.5	
“ 8	7857.4	5	W	*v* not seen; 75 caught	<12.5	
“ 26	7875.4	12	W	*v* barely seen; 81 just seen	<12.8	
Nov. 13	7893.4	5	W	*v* not seen; 63 possibly seen	<12.3?	
Dec. 5	7915.4	4	W	*v* not seen; 40 seen	<11.0	hazy
1908						
Jan. 13	7954.4	12	W	*v* not seen; 79 seen	<12.6	
Oct. 15	8230.4	5	W	*v* not seen; 75 seen	<12.5	
“ 30	8245.4	5	W	*v* = 54	12.0	
Nov. 13	8259.4	5	W	*v* 3 31; 20 5 *v*	10.4	
Dec. 18	8294.4	5	W	5 4 *v*; *v* 3 20; *v* 8 22	9.4	
1909						
Jan. 6	8313.4	5	W	*v* 2 4; 3 2 *v*	8.4	moon, hazy
“ 20	8327.4	5	W	*v* 3 5; *v* 1 4	8.4	
Feb. 12	8350.4	5	W	*v* 3 20; 10 4.5 *v*	9.8	
Mar. 5	8371.4	12	W	*v* barely seen; about = 40	11.0 ±	
1911						
Feb. 21	9089.3	12	F	40 7 *v*; *v* 2 63	11.9	
Oct. 16	9326.4	12	F	*v* not seen; est. <14.0; 81 and fainter seen	<14.0	
1912						
Jan. 25	9427.3	12	F	*v* = 5	8.8	
Feb. 12	9445.3	12	F	*v* = 19	9.9	

RW ANDROMEDAE 004132

1855.0; α $0^h 39^m 31^s$; δ +31° 53.6.

Comparison stars; magnitudes taken directly from a Harvard photograph.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 9	8650.4	5	F	*v* on limit if seen; est. <12.0	<12.0	
“ 11	8652.4	12	F	*v* 1.5 12.5; 11.5 5 *v*	12.2	
1910						
Jan. 8	8680.3	12	F	13.1 3 *v*; *v* 1 13.5	13.4	
Feb. 2	8705.3	12	F	11.5 just glimpsed; *v* not seen	<11.5	misty
“ 4	8707.4	12	F	*v* probably not seen; 13.5 seen	<13.5	
“ 12	8715.4	12	F	*v* seen only occasionally; 13.1 seen	<13.1	
Mar. 3	8734.3	12	F	*v* not seen; 13.7 seen	<13.7	
Oct. 29	8974.3	12	F	*v* 6 10.0; *v* 2 8.9	9.0	
1911						
Nov. 21	9362.4	12	F	11.0 3 *v*; *v* 2 11.5	11.3	
Dec. 12	9383.4	12	F	9.4 3 *v*; *v* 1 10.0	9.8	
1912						
Jan. 24	9426.4	12	F	*v* 1 10.0; 9.4 5 *v*	9.9	
Feb. 12	9445.3	12	F	10.0 1 *v*; *v* 4 10.5	10.1	

V ANDROMEDAE 004435 VI

1855.0; α $0^h\ 42^m\ 13^s$; δ $+34°\ 51'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 12	8592.4	5	W	$v = 33$	11.5	
Nov. 30	8641.4	5	W	v not seen; est. <11.0	<11.0	moon
Dec. 11	8652.4	12	F	v not seen; est. <13.8	<13.8	
1910						
Jan. 8	8680.3	12	F	v not seen; est. <13.8	<13.8	
Feb. 4	8707.4	12	F	51 2 v; 54 1 v	13.2	
" 12	8715.4	12	F	51 2 v; v 1 54	13.0	
Mar. 3	8734.3	12	F	38 2.5 v; v 2 41	12.0	
Apr. 1	8763.4	12	F	v 2 29; 26 4 v	11.2	

RV CASSIOPEIAE 004746a

1855.0; α $0^h\ 44^m\ 33^s$; δ $+46°\ 37'.6$.

Comparison stars; a *Durchmusterung* map was used with additional stars. These were later identified with the list of stars given in *Annals*, vol. 57, p. 224, and with a Harvard photograph, and the Harvard lettering was adopted. Two additional stars, γ and t, were used, the position of the latter being determined from a Harvard photograph. The magnitudes of two of the fainter stars were changed slightly in order to accord better with visual observations; otherwise the Harvard magnitudes were adopted.

Des.	Mag.	α 1900			δ 1900		Remarks
γ	10.0	0^h	17^m	47^s	+47°	5′.8	B. D. 46° 191
o	13.6		46	51	46	53.7	*Annals*, v. 57, p. 224
p	13.6		47	12	46	55.3	*Annals*, v. 57, p. 224
t	14.1		47	10	46	53.5	Double

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Apr. 2	8764.3	12	F	a 2 *v*	9.0	
Oct. 3	8948.4	12	F	*v* not seen; p faintest seen	<13.6	
" 28	8973.3	12	F	*v* not seen; p faintest seen	<13.6	
Dec. 2	9008.4	12	F	*v* not seen; t faintest seen	<14.1	fine seeing
1911						
Jan. 5	9042.3	12	F	*v* not surely seen; t seen	<14.1	
" 24	9061.4	12	F	*v* 2 n; m 2 *v*	13.0	
Feb. 15	9083.3	12	F	c 2 *v*; d = *v*	10.0	
" 21	9089.3	12	F	c 2 *v*; *v* 2 g	10.4	
Oct. 16	9326.4	12	F	t 1 *v*; *v* on limit	14.2	
1912						
Jan. 20	9422.3	12	F	a 6 *v*; *v* 2 c	9.5	
" 25	9427.3	12	F	a 8 *v*; *v* 2 c	9.6	
Feb. 8	9441.3	12	F	*v* 3 c; a 2 *v*	9.2	
Oct. 16	9692.3	12	F	*v* not seen; p faintest seen	<13.6	p easy
" 21	9697.3	12	F	*v* not seen; p faintest seen	<13.6	
" 29	9705.3	12	F	*v* not seen; l faintest seen	<12.1	
" 30	9706.4	12	F	*v* not seen; t glimpsed	<14.1	

W CASSIOPEIAE 004958

1855.0; α $0^h\,46^m\,21^s$; δ $+57°\,46'.5$.

Comparison stars; a *Durchmusterung* map was used, with additional faint stars, the positions of which are given in the table below. These were identified later with the Harvard comparison stars, *Annals*, vol. 57, p. 224, and the magnitudes there given were adopted. The magnitudes of the five stars not found on this list were obtained by comparison with these standards.

Des.	Mag.	α 1900			δ 1900		Harv.	B. D.		*Hels. A. G.*
c	8.4	0^h	50^m	25^s	+58°	30′.5		58°	136	774
f	8.8		44	7	58	13.8		57	156	675
h	9.1		47	38	58	39.9		58	132	736
d	9.4		49	10	57	57.3	a	57	167	
b	9.5		50	11	58	27.5	c	58	135	769
t	9.5		46	42	58	0.6	b	57	162	
a	9.8		48	6	58	10.9		57	164	
r	9.9		50	5	57	54.0	d			
s	10.1		50	1	57	57.8	e	57	171	
z	10.4		49	38	58	6.8				
x	10.5		50	2	57	59.9	f			
m	11.0		48	50	57	58.1	g			
n	11.2		48	55	57	56.6	h			
y	11.5		49	12	57	55.4	k			
u	12.1		49	1	57	59.7	l			

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Jan. 11	6491.4	12	W	phot. comp. with a	9.7	
Mar. 29	6569.4	12	W	phot. comp. with a and b	8.9	moon
Oct. 1	6755.4	—	W	v = x; x 2 v	10.6	
1907						
Aug. 11	7799.4	3	W	v = b	9.5	
“ 12	7800.4	3	W	v = b	9.5	
“ 18	7806.4	3	W	v 3 b; c 9 v	9.2	
“ 22	7810.4	3	W	c 5 v 5 b	9.0	full moon
Sept. 12	7831.4	5	W	v 5 b; c 5 v	9.0	
“ 26	7845.4	5	W	v 3 b; c 6 v	9.1	
Oct. 5	7854.4	5	W	v 5 b; c 5 v	9.0	
“ 22	7871.4	—	W	v 3 b; c 8 v	9.2	moon
Nov. 13	7893.4	5	W	v = b; v = d	9.4	
1908						
Jan. 24	7965.4	5	W	z 2 v; v 3 m	10.6	
Feb. 4	7976.4	12	W	v 1 n; z 3 v	10.9	
Mar. 5	8006.4	12	W	m 0.5 v; v 1 n	11.0	
“ 25	8026.4	12	W	n 0.5 v; s 10 v	11.2	
Apr. 3	8035.4	12	W	v 2 m	10.8	
“ 9	8041.4	12	W	n 0.5 v; m 3 v	11.3	
“ 24	8056.4	12	W	v 3 m	10.7	low
Oct. 5	8220.4	5	W	v 4 b; c 5 v	9.0	moon
“ 13	8228.4	5	W	v 5 b; v 1 h	9.0	moon
“ 19	8234.4	5	W	v 6.5 d; v 4 d; f 4 v	9.0	
“ 30	8245.4	5	W	v 7.5 d; c 5.5 v	8.8	
Nov. 19	8265.4	5	W	v = d	9.4	too hazy
“ 20	8266.4	5	W	v 2 d	9.2	
“ 29	8275.4	5	W	d 1 v	9.5	hazy
Dec. 15	8291.4	5	W	v = d	9.4	
1909						
Jan. 8	8315.4	5	W	v 3 s; v = r	9.8	moon
“ 20	8327.4	5	W	s 2 v; v 2 x	10.3	
Feb. 18	8356.4	5	W	v = x	10.5	misty
Oct. 7	8587.4	5	R	v = b; v 2 d	9.4	
“ 15	8595.4	5	R	v 2 d	9.2	
“ 26	8606.4	5	W	v 3 d	9.1	moon
Nov. 7	8618.4	5	W	v 5 d; c 7 v	9.0	
“ 18	8629.4	5	W	v 1 d	9.3	
“ 29	8640.4	5	W	v = d	9.4	
Dec. 18	8659.4	5	W	v 0.5 d; v 2.5 d	9.2	
1910						
Jan. 8	8680.4	5	W	d 3 v	9.7	
Mar. 5	8736.4	5	W	d 4 v; v 5 s	9.7	
“ 26	8757.4	12	F	x 2 v; v 2 m	10.8	
Apr. 10	8772.4	12	F	m 2 v 3 n	11.1	
1912						
Oct. 14	9690.4	12	F	v = n	11.2	
“ 15	9691.3	12	F	v 1 n	11.1	
“ 29	9705.3	12	F	n 1 v; v 2 y	11.3	
“ 30	9706.4	12	F	n 2 v; v 1 y	11.4	
Nov. 29	9736.3	12	F	x 4 v; v 3 n	10.9	
Dec. 16	9753.4	12	F	s 2 v; v 2 x	10.3	

U CEPHEI 005381 IV

1855.0; α $0^h\ 49^m\ 39^s$; δ $+81°\ 5'.6$.

Comparison stars; these were all identified on a *Durchmusterung* map. The magnitudes are taken from the *Harvard Photometry*, *Annals*, vols. 50 and 54.

Des.	Mg.	B. D.	Des.	Mg.	B. D.
l	6.4	81° 13	e	8.8	80° 21
k	6.6	79 24	h	8.8	81 28
a	7.9	81 30	m	9.0	81 22
b	8.5	81 27	f	9.4	80 22
c	8.6	81 29			

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Nov. 26	6445	7^h 34^m	12	W	phot. comp. with a, b, c, h, k	7.0	
" 26	6445	9 45	12	W	phot. comp. with a, k, h	7.0	
Dec. 11	6460	9 20	5	W	l 5 *v*; k 4 *v*	7.0	
" 11	6460	11 0	12	W	phot. comp. with a, k, l	7.1	
" 11	6460	12 25	12	W	phot. comp. with a	7.9	
" 11	6460	1 15	12	W	phot. comp. with a, b, h	8.7	
1904							
Feb. 4	6515	8 31	12	W	phot. comp. with a, b, c, f, m	7.5	
" 4	6515	9 41	12	W	phot. comp. with e, n	8.6	
" 4	6515	9 50	12	W	phot. comp. with e	8.8	
1905							
Mar. 4	6909	7 39	12	W	phot. comp. with b	9.0	
" 4	6909	8 3	12	W	phot. comp. with b	9.0	
" 4	6909	9 5	12	W	phot. comp. with m	8.8	
" 4	6909	9 40	12	W	*v* 3 m	8.7	
" 4	6909	9 55	12	W	b 5 *v*	9.0	
Aug. 3	7061	8 50	3	W	e 3 *v*; e = *v*; *v* 2 f	9.2	
" 3	7061	9 25	3	W	*v* = f	9.4	
" 3	7061	9 48	3	W	*v* 1 f	9.3	
" 18	7076	8 28	3	W	e 5 *v*; *v* 5 f	9.1	
" 18	7076	9 14	3	W	e 5 *v*; *v* 5 f	9.1	

U ANDROMEDAE 010940 VI

1855.0; α $1^h\ 7^m\ 14^s$; δ $+39°\ 57'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 12	8592.4	5	W	*v* not seen; est. <12.5	<12.5	
" 19	8599.4	12	F	*v* not surely seen; 67 and 68 seen	<13.3	
Nov. 6	8617.4	12	F	*v* not seen; 67 and 68 seen	<13.3	
Dec. 1	8642.4	12	F	*v* not seen; 67 and 68 seen	<13.3	
1910						
Jan. 10	8682.4	12	F	*v* not seen; 67 and 68 seen	<13.3	
Feb. 4	8707.4	12	F	*v* = 68; 67 1 *v*	13.2	
" 12	8715.4	12	F	*v* 1.5 67; 64 1 *v*	12.9	
Mar. 3	8734.3	12	F	59 2 *v*; 61 1 *v*	12.7	

S CASSIOPEIAE 011272 III

1855.0; α $1^h\ 9^m\ 4^s$; δ $+71°\ 50'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198. Star 53, being outside the limit of this table, was found by extrapolation to have magnitude 13.2. Star 3, B. D. 71° 64, has magnitude 7.0, *Annals*, vol. 37, p. 4.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 18	6864.3	—	W	4 4 *v*; *v* = 7	9.0	
Mar. 10	6915.4	12	W	4 3 *v*	8.8	
" 10	6915.4	12	W	phot. comp. with 4	8.8	
Apr. 15	6951.4	—	W	4 4 *v*; *v* = 5	8.8	
1906						
Jan. 24	7235.4	12	W	doubtful if seen, est. <13.0; 51 and 52 seen	<13.0	
Feb. 15	7257.4	12	W	*v* not seen; 53 seen	<13.2	
Aug. 19	7442.4	3	W	*v* = 4; *v* 4 5	8.6	
Sept. 15	7469.4	—	W	3 3 *v*; *v* 4 4	7.6	
Oct. 13	7497.4	5	W	*v* 5 4; 3 5.5 *v*	7.8	
Nov. 7	7522.4	5	W	*v* 3 4; 3 6 *v*	8.0	
Dec. 7	7552.4	5	W	4 3 *v*; 5 1 *v*	8.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Jan. 21	7597.4	12	W	*v* 1 11	9.8	
Mar. 9	7644.4	12	W	*v* 3 27; 12 5 *v*	11.0	
Apr. 5	7671.4	12	W	27 2 *v*; 21 5 *v*; *v* = 26	11.8	
1912						
Jan. 25	9427.4	12	F	*v* 2 11; 9 1 *v*	9.7	
Feb. 12	9445.4	12	F	*v* 2 10; *v* 3 11	9.6	

S PISCIUM 011208 II

1855.0; α $1^{h}\,10^{m}\,0^{s}$; δ $+8^\circ\,9'.9$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 225. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Oct. 7	7126.4	5	W	*v* not seen; 15 seen	<12.1	moon
" 26	7145.4	–	W	*v* 3 10; 8 4 *v*	10.6	
Dec. 1	7181.4	5	W	*v* = 8	10.4	
1906						
Dec. 18	7563.3	5	W	*v* 1 4; 3 5 *v*	9.6	

R PISCIUM 012502 II

1855.0; α $1^{h}\,23^{m}\,10^{s}$; δ $+2^\circ\,7'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
Oct. 11	5669.4	5	Wn	4 4 *v*; *v* 3 3	8.8	
" 15	5673.4	5	Wn	*v* 3 3	8.5	
Nov. 2	5691.3	5	Wn	4 3 *v*; *v* 2 5	9.1	
" 2	5691.3	5	W	4 3 *v*; *v* 3 5	9.0	
" 6	5695.4	5	Wn	4 4 *v*; *v* 2 5	9.2	
1902						
Jan. 11	5761.4	5	W	18 5 *v*; *v* 5 19	11.8	very faint
" 13	5763.3	5	Wn	18 5 *v*	12.1	
" 25	5775.3	5	W	*v* = 19	11.9	
" 27	5777.3	5	Wn	19 2 *v*	12.1	
" 27	5777.4	5	W	*v* = 21	12.2	on limit

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
July 12	5943.6	12	W	19 3 v; v 3 26	12.3	
Oct. 8	6031.5	5	W	2 4 v; v 4 4	8.4	
" 25	6048.4	5	W	4 1 v; v 5 5	8.8	
Nov. 20	6074.3	12	E, W	5 3 v; v = 8	9.8	
Dec. 8	6092.3	12	W	v = 8	10.0	
1903						
Jan. 10	6125.3	12	W	v barely seen; est. <18	<11.6	moon
Feb. 14	6160.3	12	W	v = 26	12.7	low, diff.
Sept. 15	6373.4	5	W	4 5 v; v 2 5	9.2	
" 16	6374.4	12	W	4 3.5 v; v 3 5	9.1	
" 22	6380.4	12	W	4 1 v; v 2 5	9.0	
" 29	6387.4	12	W	4 3 v; v 3 5	9.0	
Oct. 24	6412.4	12	W	5 4 v; v 2 13	10.0	
Nov. 12	6431.4	12	W	v barely seen; 4 and 5 seen easily	< 9.3	clouds
Dec. 15	6464.4	12	W	v = 19	11.9	
1904						
Jan. 15	6495.4	12	W	v = 31	13.2	
Oct. 16	6770.4	5	W	8 3 v; v 5 13	10.2	
1906						
Jan. 16	7227.4	12	W	v not seen; 20 seen	<12.0	hazy
" 17	7228.4	12	W	v not seen or barely caught; 26 seen	<12.7	good seeing
1907						
Oct. 26	7875.4	5	W	v probably not seen; 19 seen	<11.9	m., poor seeing

RU ANDROMEDAE 013238

1855.0; α $1^h\ 30^m\ 11^s$; δ $+37°\ 55'.6$.

Comparison stars; a map by Stanley Williams published in *A. N.*, 3861, was used at first. Later his comparison stars were nearly all identified with the Harvard stars of vol. 57, p. 225, and the Harvard lettering and magnitudes adopted. However, the magnitudes of three stars had to be determined by comparison and estimation, one being a Williams star not on the Harvard list, and two being faint Harvard stars for which no magnitudes were published.

D	9.8 mg.	B. D. 38° 304, Williams d
q	13.0 mg.	
r	13.6 mg.	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Feb. 3	6514.4	12	W	*v* not seen; l faintest seen	<11.5	moon
1909						
Oct. 12	8592.4	5	W	*v* = 0; *v* est. 12.5	12.6	
Nov. 11	8622.4	5	W	e 5 *v*	10.1	
Dec. 6	8647.4	5	W	e 10 *v*; *v* = D	10.2	glass frosty
" 9	8650.4	5	W	e 5 *v*; *v* 10 k	10.1	
1910						
Jan. 10	8682.4	5	W	*v* 2 k	10.9	
Feb. 12	8715.4	5	W	*v* = n	12.1	difficult
" 25	8728.4	12	F	*v* not seen; n faintest seen	<12.1	
Mar. 3	8734.3	12	F	*v* = r; *v* 2.5 r; q 2.5 *v*	13.4	
Apr. 1	8763.4	12	F	*v* not seen; o faintest seen	<12.7	low
" 2	8764.4	12	F	*v* not seen; o faintest seen	<12.7	low
1912						
Oct. 31	9707.4	12	F	*v*, very faint, about = r	13.6 ±	

Y ANDROMEDAE 013338 VI

1855.0; α $1^h\,31^m\,8^s$; δ $+38°\,36'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 12	8592.4	5	W	*v* = 15	9.9	
" 29	8609.4	5	W	15 2 *v*; *v* = 19	10.1	full moon
Nov. 9	8620.4	5	W	*v* 4 29; 26 4 *v*	10.8	
Dec. 9	8650.4	5	W	*v* = 30	11.0	
1910						
Jan. 10	8682.4	5	W	*v* not seen; 36 seen	<12.2	
Feb. 12	8715.4	5	W	*v* not seen; 38 barely seen	<12.5	
" 25	8728.4	12	F	*v* not seen; 30 seen	<11.0	
Mar. 3	8734.3	12	F	42 4 *v*; 41 6 *v*	13.7	*v* faint
Apr. 10	8772.3	12	F	15 1 *v*; *v* 1 14	9.8	

X CASSIOPEIAE 014958 VI

1855.0; α $1^h\,46^m\,42^s$; δ $+58°\,32'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 15	8595.4	5	W	55 2 *v*	[11.4	
Nov. 6	8617.4	12	F	*v* = 60; 55 3 *v*	11.4	
Dec. 1	8642.4	12	F	57 2 *v*; *v* 0.5 61	11.4	
1910						
Jan. 10	8682.3	12	F	*v* 2.5 57; 55 1 *v*	11.1	
Feb. 4	8707.4	12	F	38 2 *v*; *v* 2 43	10.3	
" 12	8715.4	12	F	*v* = 36	10.1	
" 25	8728.4	12	F	*v* = 36	10.1	
Mar. 5	8736.4	12	F	24 4 *v*; *v* 1 36; *v* 4 38	10.0	
" 26	8757.4	12	F	28 6 *v*; *v* 2 38; *v* = 36	10.2]	
Apr. 10	8772.4	12	F	20 1 *v*; *v* 2.5 38	9.8	

U PERSEI 015354 III

1855.0; α $1^h\ 50^m\ 0^s$; δ $+54^\circ\ 7'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 226. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Nov. 28	6082.3	5	W	*v* 4 6; 3 6 *v*	8.4	
1903						
Sept. 22	6380.4	12	W	*v* = 3; *v* 5 6	8.1	
" 30	6388.4	5	W	*v* 4 6; 3 5 *v*	8.4	
1905						
June 25	7022.4	5	W	*v* 4 7	8.4	
July 3	7030.4	5	W	*v* 4 7; 3 1 *v*	8.2	
" 26	7053.4	3	W	*v* 3 3	7.7	
Aug. 1	7059.4	3	W	*v* = 3	8.0	
" 21	7079.4	3	W	*v* 2 4; 3 3 *v*	8.2	too hazy
" 22	7080.4	3	W	3 3 *v*; *v* 3 4	8.2	
Sept. 1	7090.4	5	W	3 3 *v*	8.3	
" 20	7109.4	5	W	*v* 5 7; 3 10 *v*	8.6	
" 30	7119.4	5	W	*v* 2 6	8.5	
Oct. 28	7147.4	5	W	*v* 4 11; 7 2 *v*	9.0	
Nov. 30	7180.4	5	W	*v* = 23	10.0	
1906						
Jan. 29	7240.4	12	W	*v* 2 40; 37 4 *v*	10.8	
Mar. 31	7301.4	5	W	*v* 5 12; 7 5 *v*	9.2	
Aug. 12	7435.4	3	W	*v* 2 6	8.5	
Sept. 9	7463.4	5	W	7 6 *v*; 6 5 *v*; *v* 3 17	9.4	
Nov. 10	7525.4	5	W	*v* 3 17; *v* = 19; 12 5 *v*; *v* 2 23	9.8	
Dec. 7	7552.4	5	W	*v* = 37	10.7	
" 21	7566.4	12	W	*v* = 37; *v* 3 42	10.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Jan. 23	7599.4	12	W	$v = 17$	9.8	
Mar. 20	7655.4	12	W	v 2 3	7.8	
Apr. 2	7668.4	12	W	v 5 3	7.5	
" 27	7693.4	12	W	v 6 3	7.4	too low
" 27	7693.4	12	W	phot. comp. with 3	7.6	too low
Oct. 1	7850.4	5	W	v 5 37; $v = 23$	10.1	
Nov. 13	7893.4	5	W	v 3 34; 17 2 v	10.1	moon
1908						
Mar. 9	8010.4	12	W	$v = 3$; v 2 3	7.9	
" 24	8025.4	5	W	3 3 v; v 4 7	8.4	
Apr. 13	8045.4	12	W	3 4 v; v 5 7	8.4	moon
Oct. 21	8236.4	5	W	$v = 7$	8.8	
Nov. 1	8247.4	5	W	v 3 7; v 3 6	8.4	moon
" 16	8262.4	5	W	v 8 6; 3 3 v	8.1	
Dec. 1	8277.4	5	S	3 2 v; v 3 6	8.3	
" 12	8288.4	5	S	6 1 v; v 4 7	8.6	
1909						
Jan. 21	8328.4	5	W	v 4 7; 3 4.5 v	8.4	
Feb. 10	8348.4	5	S	3 3 v	8.3	
" 17	8355.4	5	S	v 5 6; 3 5 v	8.4	
Mar. 11	8377.4	5	W	v 5 7; 3 5 v	8.4	
" 17	8383.4	5	S	6 2 v; v 1 7	8.8	
Nov. 1	8612.4	5	S	6 1 v; v 3 7	8.6	
" 11	8622.4	5	S	3 3 v; v 1 6	8.4	
Dec. 4	8645.4	5	W	v 2 7; 3 8 v	8.7	
" 9	8650.4	5	W	v 2.5 7	8.6	
" 18	8659.4	5	W	v 3 7; v 3 6	8.4	
1910						
Jan. 8	8680.4	5	W	v 4 7; 3 3 v	8.4	
Feb. 1	8704.4	5	W	v 2 7	8.6	
Mar. 5	8736.4	5	W	6 2 v; 7 3 v	9.0	
" 26	8757.4	12	F	v 1 24; 18 1 v	9.9	
Apr. 10	8772.4	12	F	v 2 28; $v = 23$	10.0	
" 23	8785.4	12	F	v 3 37; $v = 33$	10.4	
1911						
Jan. 5	9042.4	5	S	$v = 6$?	8.7	

S ARIETIS 015912 II

1855.0; α $1^h\,56^m\,51^s$; δ $+11°\,49'.7$.

Copmarison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 226. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	17 2 *v*; *v* 2.5 19	11.9	
1910						
Jan. 8	8680.4	12	F	35 2 *v*; *v* 2 37	13.6	
Feb. 2	8705.3	12	F	*v* not seen; 37 faintest seen	<13.7	misty
" 4	8707.4	12	F	*v* not seen; 37 seen easily	<13.7	
" 10	8713.4	12	F	*v* not seen, est. <13.8; 37 seen easily	<13.8	
" 25	8728.4	12	F	*v* not seen; 37 seen	<13.7	
Mar. 3	8734.3	12	F	*v* on limit, est. 14.0; 37 seen	14.0	

RV ANDROMEDAE 020448

1855.0; α $2^h 1^m 41^s$; δ $+48° 15'.5$.

Comparison stars; four B. D. stars were used, with two additional faint stars. Their magnitudes were obtained from photometric measures, based on D. B. 48° 633, mg. 6.9, *Annals*, vol. 54. Their positions and magnitudes are as follows:

Des.	Mag.	α 1900	δ 1900	B. D.
d	7.9	2^h 3^m 36^s	+48° 7′.7	47° 571
b	9.4	4 0	18.3	48 614
a	9.9	3 8	27.4	48 612
c	10.3	2 56	16.7	48 610
x	10.7	4 39	19.8	
y	10.8	4 41	23.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 26	6872.4	—	W	*v* = x; a 5 *v*	10.6	
" 30	6876.3	12	W	*v* 1 y	10.7	
" 30	6876.3	12	W	phot. comp. with a, x, y,	10.8	
Feb. 7	6884.4	12	W	*v* 1 x; *v* 2 y	10.6	
" 7	6884.4	12	W	phot. comp. with a, x, y,	10.9	
" 24	6901.4	12	W	*v* = c; *v* 4 x	10.3	
Mar. 17	6922.3	12	W	phot. comp. with a and b	9.2	moon, misty
Apr. 1	6937.4	12	W	*v* 4 b	9.0	
" 1	6937.4	12	W	phot. comp. with b	9.1	
Sept. 23	7112.4	5	W	*v* 6 b; d 7 *v*	8.7	
Oct. 16	7135.4	5	W	b 4 *v*; *v* 2 a	9.8	
" 28	7147.4	5	W	c 1.5 *v*	10.4	
Nov. 27	7177.4	12	W	*v* = x; *v* 3 y	10.6	
Dec. 16	7196.4	—	W	a 4 *v*; *v* 2 x	10.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Jan. 26	7237.4	12	W	a 3 *v*; *v* 3 x	10.4	
Feb. 24	7266.4	12	W	*v* = a	9.9	
Mar. 23	7293.4	12	W	*v* 3 b	9.1	
" 23	7293.4	12	W	phot. comp. with d and b	9.2	
Sept. 25	7479.4	5	W	b 5 *v*; *v* 2 a	9.8	
Nov. 7	7522.4	12	W	*v* = y	10.8	
1907						
Jan. 21	7597.4	12	W	b 1 *v*	9.5	
Feb. 22	7629.4	12	W	*v* 2 b	9.2	
Mar. 6	7641.4	12	W	b 2 *v*; *v* 3 a	9.6	
" 16	7651.4	12	W	b 4.5 *v*; *v* = a	9.9	
Apr. 1	7667.4	12	W	*v* 5 x; *v* 4 y; a 5 *v*	10.3	hazy
" 17	7683.4	12	W	*v* = x	10.7	
1908						
Nov. 1	8247.4	5	W	c 6 *v*; *v* 5 x	10.6	moon
" 20	8266.4	5	W	*v* 4 a; b 6.5 *v*	9.8	
Dec. 15	8291.4	12	W	b 4 *v*; *v* 2 c	10.0	
1909						
Jan. 6	8313.4	5	W	*v* = a; *v* 1 c	10.0	hazy, moon
" 18	8325.4	5	W	*v* = b	9.4	
" 28	8335.4	5	W	*v* 2 a; c 1 *v*	10.0	
Feb. 6	8344.4	5	W	a 2 *v*; *v* 1 c	10.2	full moon
" 12	8350.4	5	W	a 3 *v*; c = *v*	10.2	
" 18	8356.4	5	W	c 3 *v*; *v* 6 x	10.4	
Mar. 17	8383.4	12	W	*v* = y	10.8	
1910						
Feb. 7	8710.4	5	W	b 3.5 *v*; *v* 1.5 a	9.8	
Mar. 3	8734.4	5	W	*v* = c	10.3	
Apr. 1	8763.4	12	F	*v* 2.5 x; a 2 *v*	10.3	
" 10	8772.4	12	F	*v* 2 a; b 7 *v*; *v* 5 x	10.0	
1912						
Feb. 23	9456.4	12	F	x 1 *v* 1 y	10.8	
Mar. 22	9484.4	12	F	a 4 *v*; *v* 2 x	10.4	

R ARIETIS 021024 II

1855.0; α $2^{h}\,7^{m}\,53^{s}$; δ $+24^{\circ}\,22'.8$.

Comparison stars; Hagen numbers used, with two additional stars, g and e, given in *Annals*, vol. 37, p. 153. The magnitudes for the fainter stars obtained from vol. 37, Table XVIII, did not agree with the observed values. Therefore a curve was drawn, based on Hagen grades and Harvard magnitudes taken from *Annals*, vol. 37, p. 191 through star 14, the magnitudes of the fainter stars used in forming the curve being obtained by estimation and comparison. The co-ordinates of this curve will be found in Table III. Stars 1 and 2, for which no Hagen grades are given, have respectively magnitudes 5.6 and 6.8, *Annals*, vol. 54. The magnitudes of the fainter stars used in forming the curve are as follows:

Hagen 18	12.0 mg.
20	12.3
26	12.9
28	13.3
29	13.5

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
Nov. 2	5691.4	5	W	*v* 0.5 5; *v* 3 g; 4 4 *v*	9.0	
“ 2	5691.4	5	Wn	*v* 2 5; *v* 3 g	9.0	
“ 6	5695.3	5	Wn	*v* 3 5; 4 2 *v*	8.9	
1902						
Jan. 11	5761.4	5	W	*v* 3 7; 6 2 *v*	9.6	
“ 13	5763.4	5	W	7 3 *v*; 9 0.5 *v*	9.9	
“ 13	5763.4	5	Wn	7 2 *v*	9.8	
“ 25	5775.4	5	W	*v* 4 7; *v* 3 10	9.6	
“ 27	5777.4	5	W	*v* = 12	10.4	
“ 27	5777.4	5	Wn	12 1 *v*	10.5	
“ 28	5778.3	5	Wn	*v* = 12	10.4	
“ 30	5780.3	5	Wn	*v* = 10; 12 2 *v*	10.4	
Feb. 4	5785.3	5	Wn	10 1 *v*	10.3	
July 12	5943.6	5	W	*v* 5 9; 5 1 *v*	9.4	
Oct. 21	6044.4	12	W	7 4 *v*; *v* 5 12	10.0	
“ 25	6048.4	12	W	*v* = 12	10.4	
“ 31	6054.4	12	W	*v* = 9	9.9	
Nov. 20	6074.4	3	E, W	*v* = 4	8.7	
Dec. 8	6092.4	3	W	*v* 3 4; 3 3 *v*	8.5	moon
“ 8	6092.4	12	W	*v* = 3	8.3	moon
1903						
Jan. 10	6125.4	3	W	*v* = 9	9.9	moon
Feb. 6	6152.4	12	W	9 3.5 *v*; *v* 3 10	10.1	hazy, moon
Sept. 16	6374.4	12	W	*v* = 26; 20 4 *v*	13.0	
“ 29	6387.4	12	W	*v* = 17; *v* 2 18	11.8	moon
Oct. 24	6412.4	12	W	*v* = 11	10.4	
Dec. 15	6464.4	12	W	*v* 3 3	8.0	
“ 15	6464.4	12	W	phot. comp. with 3 and 4	8.2	
1904						
Jan. 15	6495.4	12	W	*v* = 4	8.7	
Oct. 16	6770.4	5	W	*v* = 19	12.2	
Nov. 18	6803.4	5	W	*v* = 7	9.6	
“ 26	6811.4	5	W	*v* 3 5; 4 2 *v*	8.9	
Dec. 8	6823.4	5	W	*v* 2 3; *v* 4 4 ; *v* 2 e	8.1	
“ 16	6831.3	5	W	*v* 3 e	7.9	
1905						
Nov. 21	7171.3	5	W	*v* 3 10; 7 4 *v*	10.0	
“ 30	7180.3	5	W	*v* 4 12; 9 4 *v*; *v* 7 11	10.0	
Dec. 26	7206.4	5	W	*v* 3 4; e 4 *v*	8.5	
1906						
Jan. 9	7220.4	12	W	*v* 2 4	8.5	
Dec. 18	7563.4	5	W	*v* 6 9; 4 5 *v*	9.2	
1909						
Jan. 25	8332.4	5	W	*v* 3 4	8.4	
Feb. 12	8350.4	5	W	*v* 1 4	8.6	hazy
Mar. 15	8381.4	12	W	*v* 2 9; 7 2 *v*	9.8	
Dec. 8	8649.4	12	F	7 3 *v*; *v* 4 10	9.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 8	8680.4	12	F	2 1.5 *v*	7.0	
" 8	8680.4	3	F	*v* 2 2	6.6	
Feb. 10	8713.4	12	F	*v* 5 5; 4 1.5 *v*	8.8	
" 25	8728.4	12	F	*v* 2 4; *v* 6 5	8.6	poor seeing
Mar. 8	8739.4	5	S	*v* 8 5; *v* 3 4	8.4	
" 15	8746.4	5	S	*v* = 5; *v* 3 6	9.2	
1911						
Nov. 18	9359.4	5	S	*v* not seen; 17 barely caught	<11.8	
" 22	9363.3	12	F	*v* = 28	13.3	very clear
Dec. 12	9383.4	12	F	*v* 4 28; 20 6 *v*	12.9	
" 13	9384.3	12	F	20 2 *v* 4 26	12.6	very clear
1912						
Jan. 16	9418.4	12	F	7 2 *v* 2 9	9.8	
" 24	9426.4	5	S	*v* = 9	9.9	
Feb. 6	9439.4	5	S	4 6 *v*; *v* 6 9	9.3	
" 20	9453.4	5	S	4 3 *v*; *v* 2 5	9.0	
Mar. 7	9469.4	5	S	*v* 2 4 ; *v* 8 9	8.8	
Oct. 31	9707.4	12	F	*v* = 12	10.4	

W ANDROMEDAE 021143a VI

1855.0; α $2^h\ 8^m\ 25^s$; δ $+43° 37'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 16	8596.4	5	W	2 5 *v*; *v* 10 3	8.2	
" 29	8609.4	5	W	2 7 *v*; *v* 8 3	8.4	moon
Dec. 6	8647.4	5	W	*v* 6 5; 3 2 *v*	9.0	
1910						
Jan. 10	8682.4	5	W	*v* = 27	10.9	
Feb. 12	8715.4	5	W	53 1 *v*	12.4	
" 25	8728.4	12	F	*v* est. <50	<12.1	*v* ft., poor
Mar. 3	8734.3	12	F	*v* 1 55; 54 3.5 *v*	12.8	
" 26	8757.4	12	F	*v* not seen; 44 seen	<11.8	
Apr. 1	8763.4	12	F	55 4 *v*	13.3	*v* on limit
" 10	8772.3	12	F	*v* not seen; 54 seen	<12.4	
1911						
Nov. 18	9359.4	5	S	1 8 *v*; *v* 2 2	7.2	
Dec. 20	9391.4	5	S	2 2 *v*; *v* 10 3	8.0	
1912						
Jan. 19	9421.4	5	S	*v* = 3; *v* 3 5	9.1	
Feb. 6	9439.4	5	S	*v* = 5; *v* 2 6	9.4	
" 13	9446.4	5	S	6 2 *v*; *v* 4 19	9.9	
" 20	9453.4	5	S	6 4 *v*; *v* 2 19	10.1	
Mar. 5	9467.4	5	S	19 1 *v*; *v* 5 32	10.6	
Apr. 10	9503.4	5	S	*v* not seen; 37 seen	<11.4	
Oct. 16	9692.4	12	Wh.	*v* 2 53; 52 1 *v*	12.2	
Nov. 14	9721.4	5	Wh.	*v* 2 4; 3 1 *v*	9.1	

o CETI *021403* IV

1855.0; α $2^h\ 12^m\ 1^s$; δ $-3°\ 38'.3$.

Comparison stars; Schurig's map used, magnitudes taken from *Annals*, vol. 50.

ξ' Ceti 4.5 mg.	υ Eridani 4.8 mg.
δ Ceti 4.0	ξ Piscium 4.8

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 26	6872.4		W	δ 2 *o*	4.2	naked eye
" 26	6872.4		F	{ *o* 2 ξ Pisc. *o* 2 υ Erid. } { *o* 2 ξ Ceti *o* 1 ξ Ceti }	4.5	naked eye
" 28	6874.4		W	δ 2 *o*	4.2	naked eye
" 31	6877.3		W	δ 3.5 *o*; *o* 4 ξ Piscium	4.4	naked eye

RS PERSEI 021556a

1855.0; α $2^h\ 12^m\ 12^s$; δ $+56°\ 26'.6$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes were obtained by comparisons based on B. D. 56° 591, mg. 7.46, *Annals*, vol. 54.

Des.	Mg.	B. D.
e	8.5	56° 570
p	8.7	597
c	9.0	574
d	9.4	577
o	9.5	575
r	9.9	578

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 17	6863.4	—	W	p 3 *v*; c 0.5 *v*; *v* 4 d	9.0	
" 20	6866.4	5	Wi	*v* 2 c; e 3 *v*	8.8	
" 23	6869.4	5	Wi	*v* 2 c; e 3 *v*	8.8	
" 30	6876.4	5	Wi	e 3 *v*; *v* 1 c	8.8	
Feb. 7	6884.4	5	Wi	e 4 *v*; *v* 1 c	8.9	
" 10	6887.4	12	W	*v* 3 c; e 2 *v*	8.7	
" 10	6887.4	12	W	phot. comp. with c	8.9	
" 13	6890.3	5	Wi	*v* = c; e 4 *v*	9.0	
" 23	6900.4	5	Wi	*v* 1 c; e 4 *v*	8.9	
" 27	6904.4	5	Wi	e 5 *v*; c 1 *v*	9.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Mar. 13	6918.4	5	Wi	*v* = c	9.0	moon
" 23	6928.4	12	W	*v* = c	9.0	
" 23	6928.4	12	W	phot. comp. with c	9.1	
Sept. 30	7119.4	5	W	c 4 *v*; *v* 0.5 o	9.4	
Oct. 30	7149.4	5	W	*v* = c; *v* 4 o	9.0	
1906						
Nov. 17	7532.4	5	W	c 3 *v*; *v* 5 r	9.4	
" 22	7537.4	5	W	c 5 *v*; *v* 5 r	9.4	
Dec. 18	7563.3	5	W	c 1 *v*	9.1	
" 18	7563.4	5	W	*v* 0.5 c	9.0	
" 19	7564.4	—	W	*v* = c, or slightly fainter	9.0+	cloudy
" 19	7564.4	—	W	c 1 *v*	9.1	clearer
" 21	7566.2	—	W	c = *v*; *v* 5 r	9.2	
" 21	7566.3	—	W	c 4 *v*	9.4	glass frosty
" 21	7566.4	12	W	*v* = c	9.0	
" 23	7568.4	12	F	*v* 2 c; *v* 3 c	8.8	

S PERSEI 021558 III

1855.0; α $2^{h}\,12^{m}\,29^{s}$; δ $+57°\,55'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Nov. 3	6422.4	12	W	7 5 *v*; *v* 2 11	8.9	
" 3	6422.4	3	W	*v* = 11	9.1	

R CETI *022000* I

1855.0; α $2^{h}\,18^{m}\,38^{s}$; δ $-0°\,50'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 23	6503.3	12	W	*v* = 1; *v* 2 1	7.2	
Feb. 3	6514.3	12	W	*v* 3 1; *v* 2 1	7.0	
" 14	6525.3	12	W	*v* 5 2; 1 5 *v*	7.8	
" 24	6535.3	12	W	2 3 *v*; 3 1.5 *v*; *v* 6 4	8.7	
Mar. 2	6542.3	12	W	*v* 8 6; 3 3 *v*	8.9	
1909						
Jan. 25	8332.4	5	W	*v* 2 12; 10 2 *v*	10.8	
Feb. 25	8363.4	12	W	*v* 4 2	7.9	low, hazy
Dec. 4	8645.4	12	F	*v* just seen; <29	<12.9	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 8	8680.4	12	F	*v* 2.5 10; 6 5 *v*	10.3	
Feb. 1	8704.4	12	F	2 6 *v*; *v* 8 6	9.0	
" 2	8705.4	5	S	3 4 *v*; *v* 5 4	8.9	
" 7	8710.4	12	S	3 4 *v*; *v* 7 4	8.8	
Mar. 4	8735.4	5	S	2 8 *v*; *v* 2 6	9.4	

RR PERSEI 022150

1855.0; α $2^h 18^m 43^s$; δ $+50° 37'.1$.

This variable was first identified from a map by Graff in *A. N.*, 3926 and later connected with a *Durchmusterung* chart. It is also found in *Annals*, vol. 57, and a photographic map from the Harvard Observatory has been used recently. The letters designating the comparison stars have been taken from the Graff map, from vol. 57, and several have been assigned by the observers. The magnitudes have either been taken directly from the photograph or have been obtained by direct comparison with it. The list is as follows:

Des.	Mg.	Reference		α 1900			δ 1900		B. D.	
m	8.6	H		2^h	23^m	7^s	+50°	47'.4	50°	564
n	8.7	H			23	33		42 .1		567
o	9.0				24	33		52 .2		571
a	9.4				21	22	51	0 .2		553
c	9.5				20	19	50	39 .5		550
e	9.7				19	55		33 .9		548
b	9.9				19	44		24 .9		547
10	10.2		G		21	50		43 .9		
5	10.4	H	G		21	20		49 .8		556
w	10.9	H			21	29		58 .3		
d	11.1				20	19		46 .1		551
4	11.5		G		21	8		53 .2		
11	11.7		G		21	53		44 .1		
x_1	11.7	H			22	8		42 .1		
z	12.5				21	40		43 .5		
7	12.5	H	G		21	25		50 .2		
9	13.2	H	G		21	34		48 .6		
8	13.5	H	G		21	30		50 .2		
x	13.7				21	56		49 .5		
y	13.8				21	55		48 .6		
t	14.0				21	39		47 .8		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Feb. 8	6519.4	—	W	*v* 1 x_1; w 4 *v*	11.4	
Mar. 4	6544.4	12	W	x 3.5 *v*	12.0	
" 4	6544.4	12	W	phot. comp. with x, 5, and w	11.9	
" 13	6553.3	12	W	*v* 1 z	12.4	
" 13	6553.3	12	W	phot. comp. with x, 5, and w	12.3	
" 23	6563.4	—	W	z 2 *v*; *v* = 7	12.6	
Apr. 7	6578.4	12	W	*v* not seen; z caught	<12.5	
" 21	6592.4	12	W	*v* not seen; z glimpsed	<12.5	low
1905						
Jan. 23	6869.3	—	W	*v* 4 5; *v* = b	10.0	
" 26	6872.3	—	W	*v* 2.5 5; c 6 *v*	10.1	
" 30	6876.3	12	W	phot. comp. with x, 5, z, and b	10.6	
Feb. 7	6884.3	12	W	5 1.5 *v*	10.6	
" 7	6884.3	12	W	phot. comp. with 5	10.7	
" 21	6898.4	12	W	*v* = 4	11.5	
" 21	6898.4	12	W	phot. comp. with 4 and 5	11.4	
Mar. 11	6916.5	12	W	*v* = x; x 2.5 *v*	11.8	
" 11	6916.5	12	W	phot. comp. with *x*	12.0	
" 23	6928.3	12	W	*v* = z; *v* 3.5 z; x 5 *v*	12.3	
Apr. 22	6958.3	12	W	*v* barely seen; <z	<12.5	
Sept. 1	7090.4	5	W	*v* not seen; 11 seen	<11.7	
" 25	7114.4	12	W	*v* not seen	——	cloudy
Oct. 17	7136.4	5	W	*v* not seen	——	moon rising
" 28	7147.4	3	W	*v* not seen	——	
Nov. 14	7164.3	12	W	*v* not seen; 7 barely seen	<12.5	
Dec. 14	7194.4	12	W	5 3 *v*; 10 2 *v*	10.6	
" 26	7206.4	5	W	*v* 5 5; e 4 *v*; *v* 1 10	10.0	
1906						
Jan. 26	7237.4	12	W	*v* 3 5; a 6 *v*;	10.0	
Feb. 24	7266.4	12	W	*v* 2 5; a 9 *v*	10.2	
Mar. 23	7293.4	12	W	5 2 *v*; *v* = w	10.8	
" 23	7293.4	12	W	phot. comp. with 5 and w	10.8	
Aug. 22	7445.4	3	W	*v* not seen; 10 seen	<10.2	hazy
Sept. 25	7479.4	5	W	*v* not seen; 10 seen	<10.2	moon
Oct. 12	7496.4	12	W	*v* on limit; est. 13.0+	13.0+	
Nov. 7	7522.4	12	W	*v* = z	12.5	
1907						
Jan. 21	7597.4	12	W	*v* 5 a; m 1 *v*	8.8	
Feb. 23	7630.4	12	W	m 2 *v*; *v* 4.5 a; *v* 2 n	8.8	
Mar. 6	7641.4	12	W	m 4 *v*; *v* 5 a	9.0	
" 20	7655.4	12	W	a 2 *v*; *v* = e	9.6	
Apr. 17	7683.4	12	W	*v* = 5	10.4	too low
1908						
Oct. 21	8236.4	5	W	*v* not seen; 4 seen	<11.5	
Nov. 21	8267.4	5	W	*v* not seen; est. <11.5	<11.5	
Dec. 18	8294.4	5	W	*v* not seen; est. <12.0±	<12.0±	good seeing
1909						
Jan. 20	8327.4	5	W	*v* barely seen; est. 12.0±	12.0±	hazy
Feb. 25	8363.4	12	W	*v* 2.5 5; a 8 *v*	10.2	
Mar. 20	8386.4	5	W	*v* = m	8.6	
Apr. 7	8404.4	5	W	*v* 3 a; n 3 *v*	9.0	
1910						
Mar. 26	8757.4	12	F	*v* 5 5; a 6 *v*	10.0	
Apr. 9	8771.4	12	F	m 7 *v*; *v* 8 a	9.0	
" 21	8783.4	12	F	*v* 3.5 a; *v* 1.5 o	9.0	

Date	J.D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Apr. 28	8790.4	12	F	*v* = e	9.5	
May 7	8799.4	12	F	*v* 3 a; e 2 *v*	9.4	faint, low
1911						
Jan. 24	9061.4	12	F	y 1.5 *v*	14.0	
Feb. 21	9089.3	12	F	*v* 1.5 9; z 4 *v*	13.0	
Apr. 18	9145.4	12	F	*v* 5 5; e 5 *v*	10.0	
Nov. 1	9342.4	12	F	*v* not seen; t seen	<14.0	
" 13	9354.4	12	F	8 seen; *v* not seen	<13.5	clouds
" 16	9357.3	12	F	*v* not seen; x and y seen	<13.8	fine seeing
1912						
Jan. 16	9418.4	12	F	*v* not seen; est. <14.2; t seen	<14.2	fine seeing
" 24	9426.4	12	F	*v* not seen; t seen	<14.0	
Feb. 6	9439.3	12	F	*v* not seen; est. <14.2	<14.2	very clear
" 13	9446.3	12	F	*v* not seen; est. <14.2; t seen	<14.2	very clear
Mar. 5	9467.4	12	F	*v* not seen; y faintest seen	<13.8	
" 13	9475.4	12	F	*v* glimpsed, est. 14.2; t visible	14.2	
Apr. 10	9503.4	12	F	*v* seen, est. 13.9	13.9	
May 3	9526.4	12	F	*v* 2 9; 7 5 *v*; z 2 *v*	12.9	
" 10	9533.4	12	F	7 2.5 *v*	12.8	
Oct. 18	9694.3	12	F	*v* not seen; 8 faintest seen	<13.5	
Nov. 1	9708.4	12	F	x 2 *v*; *v* est. 14.0	14.0	very clear
" 29	9736.3	12	F	*v* not seen; t faintest seen	<14.0	
Dec. 16	9753.4	12	F	*v* not seen; y seen distinctly	<13.8	m., v. clear

R TRIANGULI 023133 III

1855.0; α $2^h\ 28^m\ 16^s$; δ $+33° 37'.8$.

Comparison stars; Hagen map and number were used. The magnitudes were taken from a curve based on Hagen grades and Harvard magnitudes taken from *Annals*, vol. 57, p. 227, with the exception of those for the three brightest stars, which are as follows: 1, 5.6 mg., vol. 50; 2, 5.9 mg., vol. 50; 3, 6.9 mg., vol. 54. The co-ordinates of the curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Sept. 22	6380.4	12	W	9 1 v	8.3	
Oct. 30	6418.4	12	W	1 3 v; v 1 3	6.6	
1905						
Mar. 18	6923.3	12	W	phot. comp. with 10	8.3	moon
Nov. 2	7152.4	—	W	18 2 v; v 1 20	9.8	
" 21	7171.4	5	W	v 4 18; 12 2 v	9.0	
Dec. 26	7206.4	5	W	v 2 6; 4 2 v	7.2	
1906						
Jan. 9	7220.4	12	W	$v = 6$	7.6	
Oct. 25	7509.4	5	W	3 3 v	7.2	
" 25	7509.4	1	W	3 2 v	7.1	finder used
Nov. 4	7519.4	—	W	4 2 v; v 8 7	6.9	
" 17	7532.4	5	W	v 4 8; v 2 7	7.5	
" 25	7540.4	5	W	v 4 10; v 2 8; 7 1 v	7.8	
Dec. 1	7546.3	5	W	8 2 v	8.1	
" 11	7556.4	5	W	9 1 v; $v = 12$	8.4	
1907						
Jan. 26	7602.4	12	W	28 1 v; 26 2 v; $v = 29$	10.5	
Feb. 8	7615.4	12	W	v 3 39; 35 1 v	11.4	
" 22	7629.4	—	W	39 2 v; v 1 40	11.8	
Mar. 9	7644.4	12	W	35 3 v; v 2 39	11.5	
" 20	7655.4	12	W	35 5 v 5 39	11.4	
Apr. 2	7668.4	12	W	$v = 29$	10.6	
1908						
Mar. 4	8005.4	5	T, W	1 5 v; v 6 4	6.1	
" 19	8020.4	5	W	1 4 v; v 7 4	6.0	moon
1909						
Jan. 28	8335.4	5	W	12 2 v; v 8 17	8.7	
1910						
Nov. 11	8987.4	5	S	$18 = v = 20$	9.8	
" 19	8995.4	5	S	12 5 v; v 2 17	9.2	
Dec. 8	9014.4	5	S	6 3 v; v 1 10	8.0	
1911						
Jan. 5	9042.4	5	S	1 7 v; v 3 4	6.4	
" 23	9060.4	5	S	1 2 v; v 8 4	5.8	
Feb. 21	9089.4	5	S	1 8 v; v 3 4	6.4	
Oct. 25	9335.4	5	S	1 10 v; v 4 4	6.4	
Nov. 22	9363.4	5	S	$v = 6$; v 4 10	7.8	
Dec. 6	9377.4	5	S	6 1 v; v 4 10	7.8	
" 13	9384.4	5	S	8 2 v; v 2 9	8.0	
1912						
Jan. 19	9421.4	5	S	20 2 v; v 4 28	10.0	
Feb. 6	9439.4	5	S	20 3 v; v 4 28	10.0	
" 13	9446.4	5	S	20 4 v; v 2 28	10.2	
" 20	9453.4	5	S	28 1 v; v 8 39	10.7	
Mar. 5	9467.4	5	S	35 3 v; v 2 39	11.5	
" 22	9484.4	5	S	39 1 v; v glimpsed	11.8	moon

T ARIETIS 024217 IV

1855.0; α $2^h 40^m 15^s$; δ $+16° 54'.1$.

Comparison stars; magnitudes taken directly from a Harvard photograph.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Dec. 6	6821.3	5	W	*v* 2 9.1; 8.4 3 *v*	8.8	
" 8	6823.3	5	W	*v* 2 9.1; 8.4 4 *v*	8.8	
1905						
Jan. 17	6863.3	—	W	9.1 2 *v*; 8.4 4 *v*	9.0	
Nov. 27	7177.4	12	W	*v* 4 9.7; 9.1 1 *v*	9.2	
Dec. 1	7181.4	5	W	*v* 2.5 9.7	9.4	
" 13	7193.4	—	W	*v* 3.5 9.7; 9.1 6 *v*	9.5	moon, hazy
1906						
Jan. 29	7240.4	12	W	*v* 4 9.7; 9.1 3 *v*	9.4	
Feb. 28	7270.4	—	W	*v* 6 9.5; *v* 1 9.1; 8.4 5 *v*	8.9	

U ARIETIS 030514 II

1855.0; α $3^h 3^m 1^s$; δ $+14° 14'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 228. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Dec. 16	6831.3	5	W	2 1 *v*; *v* = 2; *v* 7 6	9.0	
1905						
Jan. 14	6860.4	—	W	3 5 *v*; 4 1 *v*; 2 2 *v*	9.2	
Dec. 1	7181.4	5	W	*v* = 3; *v* 1 2	8.8	
1906						
Dec. 18	7563.4	5	W	*v* 6 5; *v* 1 2; 2 1 *v*	8.9	

X CETI *031401* VI

1855.0; α $3^h 12^m 3^s$; δ $-1° 36'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	$v = 25$; $v = 22$	12.4	
1910						
Jan. 8	8680.4	12	F	$v = 10 = 11$	9.8	
Feb. 1	8704.4	12	F	v 1 8; v 3.5 11	9.4	
" 2	8705.4	5	S	8 3 v; v 1 11	9.7	
" 7	8710.4	5	S	8 = v; v 3 11	9.4	
" 14	8717.4	5	S	4 4 v; v 2 8	9.2	
Mar. 3	8734.4	5	S	2 8 v; v 2 4	8.7	
" 8	8739.4	5	S	v 4 4; 2 6 v	8.5	
" 15	8746.4	5	S	v 3 4; 2 7 v	8.6	

Y PERSEI 032043 IV

1855.0; α $3^h\ 17^m\ 52^s$; δ $+43°\ 39'.9$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Oct. 12	7861.4	5	W	32 3 v; v 3 39	9.6	
" 23	7872.4	5	W	32 4 v; v 3 39; $v = 37$	9.7	moon
Nov. 1	7881.4	4	W	$v = 39$?	9.9 ±	too misty
" 11	7891.4	4	W	v 2 39; 36 5 v	9.9	
Dec. 7	7917.4	4	W	39 1 v	10.0	
1908						
Jan. 10	7951.4	—	W	32 5 v; v 3 37	9.6	
Mar. 9	8010.4	12	W	9 3 v; v 3 12	8.4	
" 25	8026.4	12	W	v 4 32; 12 3 v	9.0	
Apr. 13	8045.4	12	W	v 3 32; 12 3 v	9.0	
Oct. 16	8231.4	5	W	$v = 12$	8.6	
Nov. 1	8247.4	5	W	v 2 12; 9 2 v	8.4	moon
" 16	8262.4	5	W	v 1 12; 9 2 v	8.4	
" 23	8269.4	5	S	v 2 12; 9 2 v	8.4	
Dec. 1	8277.4	5	S	9 1 v; v 3 12	8.3	
" 12	8288.4	5	S	9 1 v; v 3 12	8.3	
1909						
Jan. 21	8328.4	5	W	32 4 v; v 4 39	9.6	
Feb. 10	8348.4	5	S	36 2 v; v 2 39	9.8	
" 17	8355.4	5	S	36 2 v; v 1 39	9.8	
Mar. 17	8383.4	5	S	36 1 v; v 2 39	9.7	
Apr. 17	8414.4	12	W	39 2 v; $v = 41$	10.0	
Nov. 1	8612.4	5	S	$v = 36$	9.6	
" 11	8622.4	5	S	36 2 v; v 1 39	9.8	
" 30	8641.4	5	S	32 2 v; v 1 36	9.6	
Dec. 6	8647.4	5	S	32 2 v; v 1 39	9.7	
1910						
Feb. 1	8704.4	5	S	32 2 v; v 2 39	9.6	
" 7	8710.4	5	S	31 2 v; $v = 32$	9.4	
" 19	8722.4	5	S	12 5 v; v 8 39	9.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Mar. 3	8734.4	5	S	9 2 *v*; *v* 2 12	8.4	
" 8	8739.4	5	S	*v* = 12; 9 3 *v*	8.6	
" 15	8746.4	5	S	*v* 1 12; 9 3 *v*	8.5	
" 23	8754.4	5	S	*v* 1 12; 9 3 *v*	8.5	
Dec. 9	9015.4	5	S	*v* = 9; *v* 3 12	8.2	
1911						
Jan. 5	9042.4	5	S	9 1 *v*; *v* 2 12	8.4	
Feb. 21	9089.4	5	S	12 5 *v*; *v* 3 38	9.3	
1912						
Feb. 20	9453.4	5	S	32 4 *v*; *v* 2 39	9.8	
Mar. 5	9467.4	5	S	32 4 *v*; *v* 1 39	9.8	
" 22	9484.4	5	S	12 6 *v*; *v* 3 39	9.4	
Apr. 10	9503.4	5	S	*v* = 12; 9 3 *v*	8.6	
" 20	9513.4	5	S	*v* = 12; 9 3 *v*	8.6	
" 30	9523.4	5	S	*v* = 12	8.6	

R PERSEI 032335 III

1855.0; α $3^h\ 20^m\ 50^s$; δ $+35°\ 10'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 229. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Oct. 19	6407.4	12	W	*v* = 5; *v* 2 5	8.9	
" 26	6414.4	12	W	5 1.5 *v*; *v* 4 9	9.2	
1904						
Apr. 21	6592.4	12	W	5 1.5 *v*	9.2	
" 21	6592.4	12	W	phot. comp. with 5	9.1	
Oct. 29	6783.4	5	Wi	9 3 *v*; *v* 3 17	9.9	
Nov. 8	6793.4	5	W	*v* 2 5; *v* = 5	8.9	
" 11	6796.4	—	W	*v* 4 5; 2 10 *v*	8.4	
" 14	6799.4	5	Wi	*v* 4 9; 2 8 *v*	8.7	
" 18	6803.4	—	W	*v* 5 5; 2 8 *v*	8.2	
" 19	6804.4	5	Wi	*v* 3 5; 2 8 *v*	8.5	
" 21	6806.4	5	Wi	*v* 3 5; 2 10 *v*	8.5	
Dec. 9	6824.4	5	Wi	5 3 *v*; *v* 4 9	9.2	
" 21	6836.4	—	W	5 3 *v*; *v* 2 8	9.2	
1905						
Feb. 3	6880.3	12	W	*v* 1 40; 35 3 *v*	12.2	
1907						
Oct. 1	7850.4	5	W	*v* 6 9; *v* 2 5; 2 9 *v*	8.6	
1908						
Jan. 22	7963.4	5	W	*v* hardly seen; <12.5	<12.5	
" 31	7972.4	12	W	*v* = 58	13.2	barely seen

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Feb. 8	7980.4	12	W	*v* not seen; 62 seen	<13.5	poor, moon
Mar. 5	8006.4	12	W	35 1 *v*; *v* 1 40	12.1	
“ 16	8017.4	12	W	17 5 *v*; *v* 6 36	11.1	moon
Apr. 3	8035.4	12	W	*v* 4 17; *v* 1 9; 5 3 *v*	9.5	clouds
1909						
Dec. 8	8649.4	12	F	*v* 3.5 25; 21 2.5 *v*	10.6	
1910						
Jan. 10	8682.4	12	F	*v* 3 9; 5 1 *v*	9.2	
Feb. 2	8705.4	5	S	*v* = 4; *v* 1 5	8.8	
“ 7	8710.4	5	S	2 8 *v*; *v* 2 5	8.6	
“ 19	8722.4	5	S	5 3 *v*; *v* 2 9	9.4	moon
Mar. 3	8734.4	5	S	5 3 *v*; *v* 1 9	9.4	
“ 8	8739.4	5	S	9 2 *v*; *v* 2 11	9.7	
“ 15	8746.4	5	S	21 4 *v*; *v* 2 31	11.0	
“ 23	8754.4	5	S	*v* < 21	<10.4	
1911						
Feb. 21	9089.3	12	F	3 6 *v*; *v* 2 5	8.4	
Apr. 29	9156.3	12	F	*v* not seen; 8 glimpsed	< 9.3	low, hazy
Nov. 22	9363.4	5	S	*v* 1 36; *v* = 34	11.8	
Dec. 13	9384.4	5	S	*v* glimpsed once; 40 seen	<12.3	
1912						
Jan. 19	9421.4	5	S	*v* not seen; 42 seen	<12.4	
Feb. 6	9439.3	12	F	*v* = 62	13.5	
Mar. 5	9467.4	12	F	*v* not seen; 40, 52, 58, seen	<13.2	moon

SY PERSEI 040950

1855.0; α $4^h\ 5^m\ 39^s$; δ $+50° 15'.5$.

Comparison stars; a *Durchmusterung* chart was used, with additional faint stars. The magnitudes were determined by estimations based on two stars, r and t, from *Annals*, vol. 70. As there is a possible error in the identification of these two stars as given in vol. 70, their positions for 1855 are given as found by micrometer comparisons with star e, which is B. D. 50° 958. These are:

Des.	α 1900	δ 1900
e	$4^h\ 5^m\ 20^s.2$	+50° 2'.5
t	5 34.7	49 52.2
r	5 10.2	49 53.2
49° 1140	5 9.4	49 52.8

Star r was then assumed to be 49° 1140. According to vol. 70 there should be a star 11.07 mg. $0^{m}.4$ preceding r and 2′ north of it. In the sky there is no star in this position as bright as the 13th magnitude. But star t is $0^{m}.4$ following r and 1′.0 south, and it is also .5 mg. brighter than r. Therefore it was assumed that the stars were not correctly identified in vol. 70, and that r has magnitude 11.07 and t mag. 10.55.

The positions and magnitudes of the comparison stars are given in the following table.

The variable was difficult of observation, on account of its redness, which was estimated 7 on a scale of 10.

Des.	Mg.	α 1900			δ 1900		B. D.	
f	10.0	4^{h}	8^{m}	47^{s}	+50°	29′.1	50°	959
e	10.4		8	42	50	9.6		958
t	10.6		8	54	49	59.6		
g	10.6		9	55	50	22.4		964
d	11.0		8	29	50	29.2		957
r	11.1		8	30	50	0.6	49°	1140
x	11.6		8	24	50	23.1		
o	11.9		8	38	50	31.7		
z	12.5		8	16	50	23.8		
5	13.8		9	0	50	26.4		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Nov. 12	8258.4	5	W	g 5 *v*; *v* 5 x	11.1	
" 21	8267.4	5	W	*v* 2 x; g 4.5 *v*	11.2	
Dec. 1	8277.4	5	W	g 4 *v*; *v* 1 x	11.2	
" 15	8291.4	12	W	*v* 2 x; *v* = d; g 8 *v*	11.3	
1909						
Jan. 20	8327.4	5	W	*v* < x, barely seen	<11.6	
Feb. 17	8355.4	5	W	x 5 *v*; *v* 1 z	12.2	on limit
Mar. 11	8377.4	5	W	*v* 2 z; x 5 *v*	12.2	
Apr. 7	8404.4	5	W	*v* = z; both on limit	12.5	hazy
" 8	8405.4	12	W	*v* = z	12.5	
Oct. 9	8589.4	5	W	g 5 *v*; *v* 5 x	11.1	
Nov. 5	8616.4	5	W	g 4 *v*; *v* 3 x	11.2	
" 30	8641.4	5	W	*v* 3 x; g 5 *v*	11.2	
Dec. 19	8660.4	5	W	g 3.5 *v*; *v* = d	11.0	
1910						
Jan. 7	8679.4	5	W	*v* 2 d; g 2 *v*	10.8	
Feb. 1	8704.4	5	W	g 10 *v*; *v* 3 d	11.2	
" 12	8715.4	5	W	*v* 8 x; *v* = d	10.9	
Mar. 4	8735.4	5	W	d 1.5 *v*	11.2	
" 26	8757.4	12	F	d 2 *v*; *v* 3 x	11.2	
Apr. 10	8772.4	12	F	g 10 *v*; *v* 7 o	11.4	
" 22	8784.4	12	F	*v* 3 o; *v* 4 x	11.4	
May 7	8799.4	12	F	*v* 2 x; *v* 2 o	11.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Feb. 23	9456.4	12	F	g 3 *v*; *v* 1 d; *v* = d	10.9	
Mar. 13	9475.4	12	F	*v* on extreme limit; est. 14.2	14.2	very clear
Apr. 10	9503.4	12	F	*v* 4 d; g 8 *v*	11.0	
" 25	9518.4	12	F	*v* 8 d; f 6 *v*	10.4	
" 30	9523.4	12	F	g 6 *v*; *v* 6 d	10.8	
May 3	9526.4	12	F	r 4 *v*; *v* 5 d; g 6 *v*	11.1	
" 10	9533.4	12	F	g 4 *v*; *v* 4 d	10.8	

W TAURI 042215 II

1855.0; α $4^h\,19^m\,41^s$; δ $+15^\circ\,42'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 230. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 8	8711.4	12	F	*v* between 13 and 17	10.9	cloudy
" 10	8713.3	12	F	13 4 *v*; *v* 4 17	10.9	
" 12	8715.4	12	F	13 2.5 *v*; *v* 7 17	10.7	
" 25	8728.4	12	F	*v* not seen; 17 seen	<11.4	poor seeing
Mar. 3	8734.3	12	F	*v* 4 13	10.0	
Apr. 9	8771.3	12	F	*v* 6 17; *v* 3 15	10.6	

RV CAMELOPARDALIS 042257

1855.0; α $4^h\,18^m\,41^s$; δ $+57^\circ\,5'.1$.

Comparison stars; a *Durchmusterung* chart was used. The magnitudes were obtained by estimation based on B. D., 57° 817, 6.7 mg., *Annals,* vol. 54. The comparison stars are as follows:

β: mg. 8.3; B. D. 56° 941;
z: 8.6; 932;
y: 8.8; 925.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Jan. 27	7968.4	5	W	z 2 *v*	8.8	
" 29	7970.4	5	W	z 3 *v*; *v* 2 y	8.8	
Feb. 8	7980.4	12	W	*v* 3 z; *v* 5 y; β 2 *v*	8.4	moon, poor
" 17	7989.4	—	W	*v* 2 β; *v* 4 y	8.2	
Mar. 9	8010.4	12	W	*v* 3 z; *v* 4 y; *v* 1 β	8.3	
" 24	8025.4	12	W	*v* 4.5 y; *v* 3 z	8.3	
Apr. 6	8038.4	5	W	*v* 4 y; *v* 3 z; *v* = β	8.3	
" 24	8056.4	12	W	*v* 4 y; *v* 3 z; β 0.5 *v*	8.3	
1912						
June 3	9557.4	12	F	β 3 *v*; *v* = z	8.6	*v* reddish

R TAURI 042209 II

1855.0; α $4^h 20^m 21^s$; δ $+9° 50'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198. One additional faint star, a, was used, which corresponds to Harvard star H, *Annals*, vol. 37, p. 182, mg. 13.7; this magnitude was also obtained by estimation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Dec. 9	6824.3	5	Wi	*v* = 4	8.1	
" 14	6829.4	5	Wi	4 2 *v*	8.3	
1905						
Jan. 10	6856.4	5	Wi	4 5 *v*	8.6	
" 19	6865.3	5	Wi	4 8 *v*	8.9	
" 20	6866.3	5	Wi	4 8 *v*; *v* 8 6	9.0	
" 23	6869.3	5	Wi	4 10 *v*	9.1	
" 30	6876.3	5	Wi	4 12 *v*; *v* 4 6	9.4	
Feb. 7	6884.3	5	Wi	6 2 *v*; *v* 3 11	10.2	
" 18	6895.3	5	Wi	*v* 3 7	9.9	
" 24	6901.4	12	W	6 2 *v*; *v* 5 11	10.1	
Nov. 21	7171.4	5	W	*v* = 6	10.0	
Dec. 7	7187.4	5	W	7 2 *v*; *v* 5 12	10.3	
1906						
Jan. 16	7227.4	12	W	23 3 *v*	12.1	hazy
" 17	7228.4	12	W	23 2 *v*; *v* 2 26	12.1	
1908						
Mar. 19	8020.4	12	W	*v* just caught, est. 13 ±	13.0 ±	
" 24	8025.4	12	W	*v* = 28	13.2	
Apr. 4	8036.4	12	W	*v* just caught; est. 12.5 ±	12.5 ±	
" 19	8051.4	12	W	25 4 *v*; *v* just caught	12.5	low

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Jan. 28	8335.4	12	F	*v* not seen; 23 and 26 just seen	<12.4	moonlight
Feb. 10	8348.4	12	F	a 2 *v*; a 2.5 *v*; *v* est. 13.8	13.9	fine seeing
" 17	8355.4	12	F	a 2 *v*	13.9	*v* on limit
Mar. 5	8371.4	12	F	*v* not seen; 26 just seen	<12.4	moon
" 14	8380.4	12	F	28 4 *v*; *v* 2 a; 38 (S Tauri map) 2.5 *v*	13.6	
" 20	8386.4	12	F	28 4 *v*; *v* 3 a; *v* = 38 (S Tauri map)	13.5	
Apr. 4	8401.4	12	F	*v* not seen; 18 faintest seen	<11.1	moon
" 7	8404.4	12	F	*v* 3 19; 16 3 *v*	11.0	
" 16	8413.4	12	F	*v* = 11	10.5	low
" 24	8421.4	12	F	*v* = 6	10.0	low, moon
Dec. 4	8645.4	12	F	*v* about = a; *v* est. 14.0–14.2	13.9	faint
1910						
Jan. 8	8680.4	12	F	28 5 *v*; *v* 2 a	13.6	
Feb. 4	8707.4	12	F	*v* 1 23; 21 3 *v*	11.8	
" 12	8715.4	12	F	*v* 3 23; *v* 1 21	11.5	
" 25	8728.4	12	F	*v* = 18	11.1	
Mar. 3	8734.3	12	F	*v* 6 6; 4 8 *v*	9.2	
" 15	8746.4	12	F	4 4 *v*; 3 10 *v*	8.5	moon
" 23	8754.4	12	F	4 4 *v*; 3 15 *v*	8.8	moon
Apr. 9	8771.3	12	F	*v* = 4; 3 5 *v*	8.0	
" 21	8783.4	12	F	4 7 *v* doubtful	8.8	low, moon
" 22	8784.3	12	F	*v* nearer 7 than 4; est. 9.5	9.5	bright moon
1911						
Jan. 24	9061.4	12	F	*v* 3 6; 4 5 *v*	9.2	
Feb. 15	9083.3	12	F	4 2 *v*; *v* 5 6	8.9	
" 27	9095.3	12	F	4 2 *v*; *v* 7 6; 4 4 *v*; *v* 10 6	8.8	
Apr. 18	9145.3	12	F	11 4 *v*; *v* 1.5 18	10.9	
Oct. 25	9335.4	12	F	26 7 *v*	13.1	low, misty
Nov. 13	9354.4	12	F	26 4 *v*; *v* 4 a	13.0	im. blurry
" 22	9363.4	12	F	*v* = 23	11.8	
Dec. 13	9384.4	12	F	5 2 *v*; *v* 3 11	10.0	
1912						
Jan. 16	9418.4	12	F	4 6 *v*; *v* 4 6	9.2	
Feb. 6	9439.4	12	F	*v* = 7	10.2	
" 20	9453.4	5	S	6 4 *v*; *v* = 11	10.4	
" 29	9462.4	5	S	*v* = 11; 6 6 *v*	10.6	moon
Mar. 7	9469.4	5	S	*v* = 23	11.8	
" 13	9475.4	5	S	*v* = 23	11.8	very faint
Apr. 10	9503.3	12	F	23 1 *v*; *v* 2 26	12.0	
Nov. 30	9737.4	12	F	3 4 *v*; *v* 2 4	7.9	
Dec. 16	9753.4	12	F	*v* = 4	8.1	*v* reddish

S TAURI 042309 II

1855.0; α $4^{h}\,21^{m}\,16^{s}$; δ $+9^{\circ}\,37'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198. Two additional faint stars were used, x and y, for which the magnitudes, 13.8 and 14.0 respectively, were determined by estimation. The positions of x and y for 1900 are:

x: α $4^h 23^m 54^s$; δ $+9^\circ 43'.0$;
y: $4 \; 24 \; \; 6$; $+9 \; 43 .3$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 30	6876.4	5	Wi	18 4 v	11.7	v just seen
Feb. 7	6884.3	5	Wi	v = 9	10.3	
" 21	6898.3	5	Wi	v 2 18; 10 4 v	10.9	
" 24	6901.4	12	W	v 2 15; 10 10 v	11.1	
Nov. 21	7171.4	5	W	v not seen; 15 seen	<11.1	
1906						
Jan. 17	7228.4	12	W	v = 38; barely seen	13.5	good seeing
1908						
Mar. 24	8025.4	12	W	v = 10	10.3	
1909						
Jan. 28	8335.4	12	F	v between 34 and 37	13.1	moon
Feb. 10	8348.4	12	F	38 3 v; v 2 a (R Tauri map)	13.6	fine seeing
" 17	8355.4	12	F	31 2 v; v 2 34	12.8	
Mar. 5	8371.4	12	F	v = 15; v 2 18	11.1	moon
" 14	8380.4	12	F	9 3 v; v 3 15	10.7	
Apr. 4	8401.4	12	F	v > 9	>10.3	moon
" 7	8404.4	12	F	v 3 9; v 2 8; 6 4 v	9.8	
" 16	8413.4	12	F	v = 10	10.3	low
Dec. 4	8645.4	12	F	v not seen; est. <14.0; 37, 38 seen	<14.0	good seeing
1910						
Jan. 8	8680.4	12	F	v est. 14.0; a (R Tauri map) 2 v	14.0	on limit
Feb. 4	8707.4	12	F	v est. 14.2; 37, 38 seen easily	14.2	on limit
" 12	8715.4	12	F	38 6 v; v est. 14.0	14.0	
Mar. 3	8734.3	12	F	v 1.5 28; v = 23	12.2	
" 15	8746.4	12	F	10 6 v; v 6 15	10.7	
" 23	8754.4	12	F	10 4 v; v 4 15	10.7	moon
Apr. 9	8771.3	12	F	v = 9; v = 10	10.3	
" 21	8783.4	12	F	v not seen; 7 (R Tauri map) seen	<10.2	
" 22	8784.3	12	F	v not seen; 7 (R Tauri) faintest seen	<10.2	
1911						
Jan. 24	9061.4	12	F	v est. 14.2; 38 easily seen	14.2	fine seeing
Feb. 15	9083.4	12	F	v not seen; x and y seen	<14.0	
" 27	9095.3	12	F	38 3 v; v 0.5 x	13.8	good seeing
Apr. 18	9145.3	12	F	10 4 v; v 4 15	10.7	
Oct. 25	9335.4	12	F	v glimpsed, <34	<13.0	cloudy
Nov. 13	9354.4	12	F	v not seen; 38 seen	<13.5	
" 22	9363.4	12	F	v est. 14.2; x and y seen	14.2	very clear
Dec. 13	9384.4	12	F	v not seen; x and y seen	<14.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Jan. 16	9418.4	12	F	v not seen; est. <14.2; x and y seen	<14.2	
" 24	9426.4	12	F	v glimpsed; est. 14.0; x and y seen	14.0	
Feb. 6	9439.4	12	F	v not seen; x and y seen	<14.0	
Mar. 5	9467.4	12	F	v not seen; 36 seen	<13.2	
Apr. 10	9503.3	12	F	v = 10	10.3	
Nov. 30	9737.4	12	F	v not seen; x and y seen	<14.0	very clear
Dec. 16	9753.4	12	F	v not seen; x faintest seen	<13.8	m., v. clear

T CAMELOPARDALIS 043065 III

1855.0; α $4^h\,25^m\,59^s$; δ $+65^\circ\,50'.9$.

Comparison stars; Hagen numbers used, magnitudes obtained from curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 230. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Nov. 26	6811.4	5	W	v 4 5; 3 2 v	8.6	
" 30	6815.4	5	Wi	v 4 8; 5 2 v	9.2	
Dec. 6	6821.3	5	W	v 4 5; 4 3 v	8.7	hazy
1905						
Jan. 23	6869.3	5	Wi	3 3 v; v 5 5	8.6	
" 30	6876.3	5	Wi	3 2 v; v 6 5	8.5	
Feb. 7	6884.3	5	Wi	v 7 5; 3 1 v	8.4	
" 13	6890.3	5	Wi	v 5 3	7.8	
" 23	6900.4	5	Wi	v 10 7; v 2 3	8.2	
" 27	6904.3	5	Wi	v 4 3	7.9	
Mar. 10	6915.4	12	W	phot. comp. with 3 and 4	7.9	
Apr. 15	6951.4	—	W	v = 5; v 1 6	9.2	
1910						
Mar. 7	8738.4	5	W	v 3 2	7.8	
1911						
Nov. 16	9357.4	12	F	v = 43; v 1 46	12.6	
1912						
Feb. 12	9445.4	12	F	v = 5	9.1	

RX TAURI 043208

1855.0; α $4^h\,30^m\,4^s$; δ $+8°\,4'$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 230. One additional faint star, r, was used, mg. 13.5, obtained by estimation. Its position for 1900 was:

r: α $4^h\,32^m\,52^s$; δ $+8°\,7'.5$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	*v* est. 14.0	14.0	very faint
1910						
Jan. 8	8680.4	12	F	*v* not seen; q seen	<13.0	
Feb. 4	8707.4	12	F	*v* not seen; r seen	<13.5	
" 12	8715.4	12	F	*v* est. 14.0	14.0	faint
Mar. 3	8734.4	12	F	q 3 *v*; r 1 *v*	13.4	
" 15	8746.4	12	F	*v* and r on limit	13.5 ±	moon
Apr. 1	8763.4	12	F	*v* = p	12.8	
" 9	8771.3	12	F	*v* = p; *v* 2 q; *v* 3 r	12.9	

V TAURI 044617 II

1855.0; α $4^h\,43^m\,39^s$; δ $+17°\,17'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 230. One additional faint star, z, was used, for which the magnitude, 13.7, was obtained by estimation; its position for 1900 was:

z: α $4^h\,46^m\,1^s$; δ $+17°\,26'.2$.

The co-ordinates of the magnitude curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Nov. 3	6788.4	5	W	4 4 *v*; *v* 2 5	9.1	
" 8	6793.4	5	W	4 2 *v*; *v* = 5	9.1	
" 11	6796.4	5	W	*v* 3 6; *v* 1 5; 4 4 *v*; 4 2 *v*	9.2	
" 14	6799.4	5	Wi	*v* 4 8; 4 3 *v*	9.4	
" 18	6803.4	5	W	4 1 *v*	9.0	
" 21	6806.4	5	Wi	4 2 *v*; *v* 4 8	9.3	
" 26	6811.4	5	W	*v* = 5; 4 3 *v*; *v* 5 8	9.2	
Dec. 9	6824.4	5	Wi	*v* 4 17; 11 4 *v*	10.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Feb. 3	6880.4	12	W	v almost invisible; <41	<13.2	
1906						
Jan. 17	7228.4	12	W	39 3 v	13.4	
Feb. 22	7264.4	12	W	8 4 v; v 8 17	10.2	
1908						
Mar. 4	8005.4	5	T, W	8 3 v; v 1 11	10.2	
" 19	8020.4	5	T	11 4 v; v 2 17	10.6	
1909						
Jan. 25	8332.4	5	W	$v = 8$	9.9	clouds
Feb. 18	8356.4	5	W	$v = 24$	12.3	v on limit
Mar. 5	8371.4	5	W	v not seen; est. <11.0	<11.0	moon
Apr. 4	8401.4	12	F	v not seen; 32 seen	<12.6	
" 7	8404.4	12	F	v not seen; z seen	<13.7	
" 16	8413.4	12	F	v not seen; z seen	<13.7	very faint
" 24	8421.4	12	F	v not seen; 25 seen	<12.3	moon
Dec. 18	8659.4	5	W	v 3 10; 5 5 v	9.6	
1910						
Jan. 8	8680.4	5	W	$v = 8$	9.9	
Feb. 4	8707.4	5	W	$v = 17$	10.9	
Mar. 4	8735.4	5	W	$v = 24$	12.3	on limit
Apr. 1	8763.3	12	F	$v = 25$; 22 2 v	12.2	
" 9	8771.3	12	F	17 7 v; 18 5 v; v 2 21	11.6	
" 22	8784.3	12	F	8 2 v; 11 2 v	10.2	
1911						
Jan. 28	9065.3	12	F	39 6 v; 41 4 v; z 2 v	13.7	
Feb. 15	9083.3	12	F	39 2 v; v 1 41	13.2	
" 27	9095.3	12	F	z 4 v; 41 6 v; v est. 14.0 or 13.8	13.9	faint
Apr. 18	9145.3	12	F	v 1 27; 25 1 v	12.4	
" 25	9152.3	12	F	17 4 v; 18 2 v	11.4	
Nov. 16	9357.4	5	S	$21 = v$; 18 4 v	11.6	
" 21	9362.4	5	S	21 4 v; v 5 25	11.9	
Dec. 13	9384.4	5	S	25 2 v	12.5	just caught
" 19	9390.4	5	S	v just caught, = 30	12.5	on limit
1912						
Jan. 24	9426.4	12	F	35 1 v; v 3 38	12.8	
Feb. 6	9439.4	12	F	$v = 25$	12.3	
Mar. 5	9467.4	12	F	v 1 8; 6 4 v	9.8	
" 13	9475.4	5	S	$v = 8$; v 4 11	9.8	
Apr. 10	9503.3	12	F	$v = 4$	8.9	

TY AURIGAE 045148

1855.0; α $4^h\,48^m\,3^s$; δ $+48^\circ\,4'.0$.

Comparison stars; a *Durchmusterung* chart was used with additional faint stars. The magnitudes were found by estimation based on B. D. 47° 1089, mg. 7.08, *Annals*, vol. 54. The positions and magnitudes of comparison stars are tabulated below.

Des.	Mag.	α 1900	δ 1900	B. D.
h	9.1	4^h 50^m 57^s	+48° 11′.4	48° 1188
f	9.8	50 18	20.3	1184
r	10.8	50 37	10.1	
s	10.9	50 9	16.8	
e	11.1	50 6	7.1	1183
t	11.3	49 58	12.3	
x	11.6	51 24	11.9	
z	12.4	51 29	9.0	
w	12.7	51 22	9.9	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Feb. 17	8355.4	5	W	*v* 1 r; *v* = s	10.8	
Mar. 2	8368.4	12	W	*v* 2 r; *v* 5 x	10.8	
" 18	8384.4	12	W	r 4 *v*; *v* 5 x	11.2 ?	*v* uncertain
Apr. 9	8406.4	5	W	*v* 2.5 r; *v* 8 x	10.7	
" 22	8419.4	5	W	*v* 2 r	10.6	
" 24	8421.4	12	F	*v* 2 x	11.4	
May 8	8435.4	12	F	*v* = r; *v* 4 x	11.0	
" 11	8438.4	12	F	r 3 *v*; *v* 3 t	11.0	
" 23	8450.4	12	F	r 2 *v*; *v* 4 x	11.1	
Nov. 6	8617.4	5	W	r 3 *v*; *v* 4 x	11.2	
1910						
Apr. 1	8763.4	12	F	*v* 4 x; e 0.5 *v*	11.2	
" 10	8772.4	12	F	*v* 4 x; r 3 *v*	11.2	
" 22	8784.4	12	F	*v* = r; *v* 7 x	10.8	
May 19	8811.4	12	F	*v* = e	11.1	
1912						
May 2	9525.4	12	F	*v* = r	10.8	
" 3	9526.4	12	F	*v* 2 r; f 8 *v*	10.6	
" 10	9533.4	12	F	*v* 2 r; f 8 *v*	10.6	very clear

Note.—The small range of this star suggests that it is a short period variable, but the observations thus far made are not sufficient to decide this question. A knowledge of the spectrum is desirable for this purpose.

R ORIONIS 045307 II

1855.0; α 4^h 51^m 8^s; δ +7° 54′.3.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 231. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Jan. 11	7587.4	12	W	v 5 14; v 3 7; $v = 6$	9.8	
Feb. 6	7613.4	5	W	7 5 v; v 5 17	10.4	

V ORIONIS 050003 II

1855.0; α $4^h\,58^m\,25^s$; δ $+3°\,54'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve drawn with Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 231. The co-ordinates of this curve will be found in Table III. One additional faint star, z, was used, which was located on the Hagen map. Its magnitude was determined by direct estimation.

z: 14.0 mg. 1900; α $5^h\,1^m\,5^s$; δ $+3°\,56'.8$.

Star 29 was found to differ slightly in declination from the position given by Hagen. Observed δ $+3°\,56'.9$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Dec. 18	6833.4	—	W	$v = 13$	10.0	
1905						
Mar. 14	6919.4	12	W	v not seen; 28 just seen	<11.6	moon
1906						
Jan. 17	7228.4	12	W	v barely seen; 45 2 v	12.9	
Feb. 17	7259.4	12	W	v not seen; 45 seen	<12.7	
Mar. 14	7284.4	12	W	$v = 40$	12.4	
" 28	7298.4	12	W	21 3 v; v 1 32	11.4	
1907						
Jan. 11	7587.4	12	W	27 3 v; $v = 32$	11.8	
Feb. 8	7615.4	12	W	v 5 19; 7 8 v; 13 4 v	10.1	
1908						
Mar. 10	8011.4	12	W	v not seen; 40 seen	<12.4	
Apr. 4	8036.4	12	W	v not seen; 45 seen	<12.7	
" 19	8051.4	12	W	v not seen; 45 just seen	<12.7	low
1910						
Jan. 12	8684.4	5	W	v 1 16	10.1	too hazy
Feb. 4	8707.4	5	W	6 5 v; v 5 13	9.4	
" 12	8715.4	5	W	6 4 v; v 4 13	9.4	
" 25	8728.4	5	W	15 2 v; v 3 19	10.3	
Mar. 5	8736.4	5	W	v 2 19; 15 3 v	10.4	
" 23	8754.4	12	F	29 2.5 v; v 4 38	11.9	
Apr. 9	8771.4	12	F	$v = 40$; v 2 43	12.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Jan. 28	9065.4	12	F	45 4 v; v 4 z	13.4	
Feb. 15	9083.4	12	F	v on limit, est. 13.5+; 45 seen easily	13.5+	moon
" 27	9095.4	12	F	45 6 v; v = z	13.6	
Apr. 18	9145.3	12	F	45 2 v	12.9	
" 25	9152.3	12	F	v not seen; 40 just glimpsed	<12.4	
Nov. 22	9363.3	12	F	v on limit, est. 14.0; 45 seen	14.0	very clear
Dec. 13	9384.4	12	F	v not seen, est. <14.2	<14.2	very clear
1912						
Jan. 16	9418.4	12	F	45 6 v; v est. 13.1	13.2	fine seeing
" 24	9426.4	12	F	45 1 v; v est. 12.9	12.8	good seeing
Feb. 6	9439.4	12	F	38 2 v 1 40	12.3	
Mar. 5	9467.4	12	F	29 2 v; v 4 40	12.0	
Apr. 10	9503.3	12	F	16 2 v; v 4 21	10.4	
" 20	9513.3	12	F	8 6 v; v 3 20	10.1	moon
Nov. 30	9737.4	12	F	v = 39	12.3	
Dec. 16	9753.4	12	F	v = 21	10.8	

R AURIGAE 050953 III

1855.0; α $5^h 5^m 37^s$; δ $+53° 25'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Nov. 28	6082.3	5	W	v 3 8; 4 3 v	9.0	
1906						
Jan. 24	7235.4	12	W	v glimpsed only, = 43	12.9	
Feb. 22	7264.4	12	W	31 3 v; v 8 43	12.2	
Mar. 14	7284.4	12	W	v 3 25; 16 4 v	10.8	
" 28	7298.4	12	W	8 5 v; v 3 14	9.8	
Nov. 14	7529.4	5	W	v = 4; v 4 8	8.8	
Dec. 7	7552.4	5	W	14 3 v; v = 16	10.1	
1907						
Apr. 15	7681.4	5	W	v not seen; 25 seen	<11.4	misty
1908						
Jan. 29	7970.4	5	W	v 3 23; 14 2 v	10.4	
Feb. 6	7978.4	5	W	v = 14; 8 4.5 v; v 5 23; 12 3 v	10.1	
Mar. 5	8006.4	12	W	14 4 v; v = 16	10.2	
" 21	8022.4	5	W	25 3 v; v = 26	11.6	
Apr. 2	8034.4	5	W	v = 25	11.4	clouds
" 16	8048.4	12	W	v 4 35; 25 6 v	12.0	moon
May 18	8080.4	12	W	v possibly caught, 12.5 ±; 34 seen	12.5 ±	
Oct. 21	8236.4	5	W	v = 8	9.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Nov. 1	8247.4	5	W	*v* 3 8; 4 3 *v*	9.0	moon
" 16	8262.4	5	W	*v* = 8	9.4	
" 23	8269.4	5	S	8 4 *v*	9.8	
Dec. 1	8277.4	5	S	*v* = 8	9.4	
" 12	8288.4	5	S	4 5 *v*; *v* 3 8	9.2	
1909						
Jan. 21	8328.4	5	W	*v* 4 4; 3 3 *v*	8.4	
Feb. 10	8348.4	5	S	*v* 1 4; 3 2 *v*	8.4	
" 17	8355.4	5	S	*v* 1 4; 3 2 *v*	8.4	
Mar. 5	8371.4	12	W	3 2 *v*; *v* 5 4	8.2	full moon
" 11	8377.4	5	W	*v* 1 3	8.0	
" 26	8392.4	5	W	*v* 2 4; 3 4 *v*	8.5	
Apr. 4	8401.4	5	W	4 2 *v*; *v* 1 5	8.8	
" 24	8421.4	5	W	*v* 5 8; 4 3 *v*	9.0	
May 12	8439.4	12	F	*v* = 8	9.4	
Dec. 10	8651.4	12	F	24 2 *v*; *v* 2 27	11.4	
1910						
Jan. 15	8687.3	12	F	*v* = 29	11.8	
Feb. 10	8713.4	12	F	*v* = 8	9.4	
Mar. 4	8735.4	12	F	*v* 2 8; 4 5.5 *v*	9.2	
" 26	8757.4	12	F	*v* 1 4; 3 3 *v*	8.5	
Apr. 10	8772.4	3	F	*v* 2 3; *v* 1 2	7.8	finder
" 22	8784.4	12	F	*v* = 3	8.1	

W AURIGAE 052036 VI

1855.0; α $5^h 17^m 7^s$; δ $+36° 46'.2$.

Comparison stars; Hagen numbers used, with one additional faint star, s, which is taken from *Annals*, vol. 57, p. 232. The magnitudes are taken from the Hagen catalog, column H. P., except for star s, which has magnitude 13.3, obtained by estimation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Jan. 28	8335.4	5	W	*v* barely seen; 72 just seen	<12.0	
Feb. 22	8360.4	5	W	*v* not seen; 66 seen	<11.5	
Mar. 18	8384.4	5	W	*v* not seen; 72 seen	<12.0	
Apr. 11	8408.4	5	W	*v* not seen; 72 seen	<12.0	
" 22	8419.4	5	W	*v* not seen; 72 seen	<12.0	
" 24	8421.4	12	F	*v* not seen; 92 seen	<13.2	
May 11	8438.4	12	F	92 2 *v*; *v* est. 14.2	13.8	
1911						
Feb. 27	9095.3	12	F	29 2 *v*; *v* = 36	10.6	
Apr. 18	9145.4	12	F	*v* = 92	13.2	
" 29	9156.3	12	F	*v* not seen; 89 seen	<13.1	89 diff.
1912						
Apr. 19	9512.4	12	F	*v* = 92; *v* est. 13.0	13.1	difficult

Y AURIGAE 052142 IV

1855.0; α $5^h\ 18^m\ 20^s$; δ $+42^\circ\ 18'.5$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241							
Feb. 8	6519	9^h	30^m	5	W	33 3.5 *v*	10.6	
" 10	6521	10	5	12	W	*v* 4.5 33; 22 7 *v*; *v* = 24	9.7	*v* red
" 11	6522	9	30	12	W	phot. comp. with 22, 24, 33	10.2	

S ORIONIS *052404* I

1855.0; α $5^h\ 21^m\ 51^s$; δ $-4^\circ\ 48'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 232. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Feb. 2	6879.4	12	W	24 4 *v*; *v* 2 33	10.8	
" 14	6891.4	—	W	*v* 2 24	10.0	moon
" 24	6901.4	5	Wi	*v* 3 24; 21 4 *v*	10.0	
Mar. 10	6915.4	12	W	17 5 *v*; *v* 8 24	9.8	
" 10	6915.4	12	W	phot. comp. with 16, 17, 18, and 23	9.8	
1906						
Jan. 29	7240.4	12	W	*v* = 58; *v* 2 57	13.2	
Feb. 17	7259.4	12	W	*v* = 54; *v* 3 58	13.0	
Mar. 14	7284.4	12	W	33 3 *v*; *v* 4 37	11.6	
" 28	7298.4	12	W	24 3 *v*; *v* 8 33	10.5	
1907						
Jan. 11	7587.4	12	W	*v* 1 46	12.5	
Feb. 8	7615.4	12	W	*v* on limit, est. 13.0+	13.0+	
1911						
Nov. 22	9363.3	12	F	*v* = 58	13.3	
Dec. 13	9384.4	12	F	*v* = 57	13.2	
1912						
Jan. 16	9418.4	12	F	33 3 *v*; *v* 4 37	11.6	
" 24	9426.4	12	F	35 3 *v*; *v* 2 37	11.9	
Feb. 6	9439.4	12	F	*v* = 33	11.3	reddish
Mar. 7	9469.4	12	F	33 1 *v*; *v* 6 37	11.4	
Apr. 10	9503.4	12	F	24 3 *v*; *v* 6 33	10.6	

S CAMELOPARDALIS 053068 III

1855.0; α $5^h 25^m 22^s$; δ $+68° 42'.3$.

Comparison stars; Hagen numbers used, magnitudes obtained from curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 232. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Nov. 29	7544.4	5	W	v 5 10; 4 4 v	8.8	
1907						
Apr. 15	7681.4	5	W	6 2 v; v = 8	9.2	
" 24	7690.4	5	W	v 3 6; 4 5 v	8.7	
May 11	7708.4	5	W	v 1 6; 4 6 v	8.8	
Sept. 15	7834.4	5	W	v = 4; v 8 6	8.2	moon
Nov. 13	7893.4	5	W	v = 10	9.5	
1909						
May 8	8435.4	5	W	v 1 6	8.8	
" 25	8452.4	5	W	2 5 v; v 3 6	8.6	
June 24	8482.4	5	W	4 3 v; v 4 6	8.6	
1912						
Feb. 12	9445.4	12	F	4 2 v; v 2 6	8.6	

RR TAURI 053326 VI

1855.0; α $5^h 30^m 30^s$; δ $+26° 17'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Mar. 4	6544.4	12	W	phot. comp. with 29, 30, 37, and 47	11.2	

RU AURIGAE 053337

1855.0; α $5^h 30^m 14^s$; δ $+37° 33'.0$.

Comparison stars; A *Duchmusterung* chart was used with additional faint stars. The magnitudes were obtained by estimations, based on B. D. 37° 1277, which has mg. 7.33, *Annals*, vol. 54. The positions, which are given in the following table, are found in the Potsdam *Photographische Himmelskarte*, vol. II, plate 834.

Des.	Mag.	α 1900	δ 1900	B. D.	Potsdam, II, 834
1	8.9	5^{h} 33^{m} 31^{s}	+37° 41′.4	37° 1278	413
3	9.1	33 36	53.1	1280	421
14	9.2	32 13	49.3	1272	269
x	12.3	33 35	31.8		420
y	12.3	33 45	34.2		435

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 10	8713.4	5	W	*v* = x	12.3	
Mar. 3	8734.4	5	W	1 3 *v*; 14 = *v*	9.2	
" 26	8757.4	12	F	1 4 *v*; 3 1.5 *v*	9.3	
Apr. 10	8772.4	12	F	*v* = 1; *v* 2 3	8.9	
" 22	8784.4	12	F	1 3 *v*; 3 1 *v*	9.2	
1912						
Apr. 25	9518.4	12	F	*v* not seen; y seen, very faint	<12.3	low, clear
May 2	9525.4	12	F	*v* not seen; y seen, very faint	<12.3	moon
" 3	9526.4	12	F	*v* not seen; y seen	<12.3	moon
" 10	9533.4	12	F	*v* not seen; est. <13.5	<13.5	low, clear

U AURIGAE 053531 III

1855.0; α 5^{h} 32^{m} 43^{s}; δ +31° 57′.8.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 233. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Feb. 6	8344.4	5	W	*v* 4 37; 24 5 *v*	10.4	full moon
Mar. 11	8377.4	5	W	*v* not seen; 57 seen	<12.0	
Apr. 11	8408.4	5	W	*v* not seen; 57 seen	<12.0	
" 17	8414.4	12	W	doubtful if seen; est. <13.0	<13.0	
" 24	8421.4	12	F	*v* not seen; 75 seen	<12.9	
May 11	8438.4	12	F	*v* not seen; 75 seen	<12.9	
Dec. 4	8645.4	12	F	*v* between 5 and 6	8.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 15	8687.3	12	F	24 2 *v*; *v* 2 28	10.1	
Feb. 10	8713.4	12	F	*v* 5 37; *v* 1.5 32	10.3	
Mar. 4	8735.4	12	F	37 2 *v*; *v* 2 46	11.2	
" 26	8757.4	12	F	46 2 *v*; *v* 2 52	11.6	
Apr. 10	8772.4	12	F	52 4 *v*; *v* 2 65	12.2	
" 22	8784.4	12	F	*v* = 62±	12.4±	
" 30	8792.4	12	F	62 6 *v*; *v* = 73	12.9	

Z TAURI 054615 a VI

1855.0; α $5^h\,44^m\,5^s$; δ $+15°\,45'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	*v* 2 25	9.9	
1910						
Jan. 10	8682.4	12	F	*v* = 60; 55 1 *v*	11.6	
Feb. 4	8707.4	12	F	*v* 2 65; 60 2 *v*	11.7	
" 12	8715.4	12	F	*v* = 71; *v* = 72	12.1	
Mar. 3	8734.3	12	F	*v* = 79	12.4	
Apr. 1	8763.4	12	F	85 2 *v*	12.9	
" 26	8788.4	12	F	90 4 *v*	13.2	

RU TAURI 054615 c VI

1855.0; α $5^h\,44^m\,16^s$; δ $+15°\,55'.5$.

Comparison stars; on map with Z Tauri. Hagen numbers used, magnitudes taken from Hagen catalog, column H. P. One additional faint star, n, was used, mg. 13.3, obtained by estimation. Its position for 1900 was:

n: α $5^h\,46^m\,48^s$; δ $+15°\,56'.6$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	*v* not seen; est. <14.2	<14.2	fine seeing

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 4	8707.4	12	F	*v* not seen; <88	<12.8	
" 12	8715.4	12	F	*v* not seen; 88 seen easily	<12.8	
Mar. 3	8734.3	12	F	n 2 *v*; *v* est. 14.0	13.8	
Apr. 1	8763.4	12	F	*v* = n; 88 7 *v*	13.4	
" 26	8788.4	12	F	*v* < n	<13.3	low

6 . 1903 TAURI 054715 VI

1855.0; α $5^h\,44^m\,41^s$; δ $+15°\,41'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P. (On map with Z Tauri).

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	12	F	*v* = 35; *v* 1 35	10.4	
1910						
Jan. 10	8682.4	12	F	30 1.5 *v*	10.4	
Feb. 4	8707.4	12	F	*v* = 30	10.2	
" 12	8715.4	12	F	*v* = 34	10.4	
Mar. 3	8734.3	12	F	30 1.5 *v*	10.4	
Apr. 1	8763.4	12	F	30 2.5 *v*	10.4	

Note.—Graff (*A. N.* 3977) stated that he did not find this star to vary. As it was on the map with Z Tauri, which was under observation during 1910, it was also observed several times, but was found to have practically no variation.

V CAMELOPARDALIS 054974

1855.0; α $5^h\,43^m\,29^s$; δ $+74°\,29'.0$.

Comparison stars; a Harvard photograph was used, with additional faint stars, to which letters and magnitudes were assigned. The positions of three of these additional stars were determined with the filar micrometer, but the others were too faint to bear the illumination. They were therefore identified on the photograph and their positions determined approximately by measurement. The magnitudes were determined by estimation on very clear nights. The positions and magnitudes of these additional stars are tabulated below.

Des.	Mg.	α 1900	δ 1900
m	12.4	5h 48m 23s	+74° 30′.6
l	12.5	47 42	31.1
o	12.5	47 46	33.7
x	13.2	50 40	33.5
y	13.5	50 10	25.0
r	13.7	49 17	29.1
z	13.8	49 46	24.9
s	13.9	49 36	29.1
t	14.0	50 3	29.1

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Aug. 13	7801.4	3	W	*v* = 9.3	9.3	good seeing
Sept. 15	7834.4	5	W	*v* = 11.3, barely seen	11.3	moon
1909						
Apr. 23	8420.4	5	W	*v* on limit; est. 12.0+	12.0+	
May 8	8435.4	5	W	*v* not seen; est. <12.0; 11.3 seen faintly	<12.0	
" 25	8452.4	12	F	12.2 11 *v*; *v* est. 13.0	13.2	v. faint, m.
June 15	8473.4	12	F	12.2 9 *v*; x 1 *v*	13.2	
1910						
Apr. 30	8792.4	12	F	*v* = 11.3	11.3	
May 17	8809.4	12	F	*v* = 10.0	10.0	moon
Oct. 3	8948.4	12	F	m 2 *v*	12.6	
" 21	8966.4	12	F	*v* on limit; 12.2 easily seen; *v* est 13.0	13.0	
" 31	8976.3	12	F	*v* 2 s; *v* 3 t; y 2 *v*	13.7	all faint
Nov. 19	8995.4	12	F	*v*, s, t, not seen; *v* est. 14.0±	14.0±	
Dec. 2	9008.4	12	F	s 2 *v*; *v* = t; r 4 *v*	14.1	very faint
1911						
Jan. 16	9053.3	12	F	*v* not seen; t seen dimly	<14.0	
" 24	9061.3	12	F	*v* not seen; est. <14.2; t seen	<14.2	good seeing
Feb. 21	9089.3	12	F	*v* not seen; t seen easily	<14.0	
Apr. 17	9144.4	12	F	*v* not seen; t seen easily	<14.0	cloudy
" 18	9145.4	12	F	*v* not seen; t seen	<14.0	very clear
" 26	9153.4	12	F	*v* not seen; t seen	<14.0	
May 18	9175.4	12	F	*v* not seen; t seen	<14.0	
" 26	9183.4	12	F	*v* not seen; t seen	<14.0	fine seeing
Oct. 16	9326.4	12	F	9.3 4 *v*; *v* 3 10.0	9.7	
Nov. 16	9357.4	12	F	10.0 2 *v*	10.2	
Dec. 7	9378.3	12	F	*v* 8.5 11.3; 10.0 4 *v*	10.4	
" 13	9384.4	12	F	10.0 .5 *v*; *v* 4 11.3	10.7	
1912						
Jan. 20	9422.3	12	F	*v* = 12.2	12.2	very clear
Feb. 8	9441.3	12	F	12.2 2 *v*; *v* 2 l	12.4	
Mar. 13	9475.4	12	F	*v* 0.5 y	13.4	very clear
Apr. 19	9512.4	12	F	*v* = z	13.7	
May 11	9534.4	12	F	*v* not seen; t seen faintly	<14.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Oct. 18	9694.3	12	F	v not seen; o faintest seen	<12.5	
Nov. 1	9708.4	12	F	v not seen, est. 3 < t	<14.2	very clear
" 18	9725.3	12	F	v not seen; z faintest seen	<13.8	moon
" 30	9737.3	12	F	v not seen; t faintest seen	<14.0	very clear
Dec. 12	9749.3	12	F	v possibly glimpsed, est. 14.0; t seen	14.0	
" 16	9753.4	12	F	v not seen; t faintest seen	<14.0	m., v. clear

Note.—This star was also observed nine times from Sept. 18, 1909, to April 2, 1910, by F, but as it was faint during this time it was confused with star s, which is close by. As there are only faint stars in the immediate vicinity the variable could not have been brighter than 12.5 without being detected. Therefore it may reasonably be assumed that during this time it was at least < 12.5 mg.

U ORIONIS 054920 II

1855.0; α $5^h\ 47^m\ 13^s$; δ $+20°\ 8'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Jan. 17	7228.4	12	W	v = 49	11.3	
" 24	7235.4	12	W	v 3 62; 41 8 v	11.4	
Feb. 22	7264.4	12	W	v = 41	10.7	
1907						
Mar. 15	7650.4	5	W	v 5 41; v = 29	10.0	cloudy
Apr. 11	7677.4	5	W	v 8 11; v 2 9; v = 5	8.1	
1908						
Jan. 22	7963.4	5	W	v just seen; est. 12.0 ±	12.0 ±	clouds
" 31	7972.4	12	W	v 1 62	11.6	
Feb. 6	7978.4	12	W	39 5 v; v 5 62	11.1	
Mar. 7	8008.4	5	W	v 5 41; v 2 39; 25 4 v	10.2	
" 21	8022.4	5	W	11 3 v; v = 15	9.2	
1909						
Feb. 13	8351.4	5	W	41 5 v; v 4 48	11.0	
" 22	8360.4	5	W	41 5 v; v = 43	11.0	
" 25	8363.4	12	W	39 3 v; 41 3 v	10.9	
Mar. 14	8380.4	5	W	v 4 41; v = 35	10.2	
" 20	8386.4	5	W	v 3 39; 35 1 v	10.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 7	8404.4	5	W	v 4 39; v = 35	10.2	
" 17	8414.4	12	W	v = 11	8.8	
Dec. 8	8649.4	5	W	41 5 v; v 3 62	11.3	
" 18	8659.4	5	W	v 2 62	11.5	
1910						
Jan. 8	8680.4	5	W	v = 82	12.1	near limit
Feb. 4	8707.4	12	F	41 3.5 v; v = 45	11.1	
" 12	8715.4	12	F	41 2 v; v 4 49	10.9	
" 25	8728.4	12	F	25 3 v; 29 1 v	10.0	poor seeing
Mar. 5	8736.4	12	F	v 2.5 39; 35 1 v	10.3	
" 23	8754.4	12	F	21 2 v; v 4 29	9.6	
Apr. 9	8771.4	12	F	v 2 14; v 3 15; v 1.5 11; v 1 9	8.8	
" 22	8784.3	12	F	4 3 v; v 4 5	7.5	
1910						
May 5	8797.3	12	F	3 3 v; v 7 4	6.8	
1911						
Jan. 28	9065.4	12	F	45 2 v; v 4 55	11.3	
Feb. 15	9083.4	12	F	41 4 v; v 2 49	11.1	
" 27	9095.4	12	F	41 2 v; v 2 49	11.0	
Apr. 11	9138.4	12	F	v = 11	8.8	
" 25	9152.4	12	F	4 5 v; v 2 5	7.7	
May 5	9162.4	12	F	v = 4	7.2	
" 14	9171.4	12	F	v 4 4; 3 1.5 v	6.8	
1912						
Apr. 20	9513.4	12	F	3 3 v; v 3 4	7.0	moon

Z AURIGAE 055353 IV

1855.0; α $5^h 50^m 0^s$; δ $+53° 17'.4$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Mar. 19	8020.4	5	T	35 2 v; v 4 38	10.6	moon
Apr. 14	8046.4	12	W	v 4 32; 19 4 v	9.9	moon, hazy
1909						
Jan. 18	8325.4	5	W	38 2 v; v 2 39	11.0	
" 27	8334.4	5	W	v = 38	10.9	
Feb. 10	8348.4	5	W	38 2 v; v 1 39	11.0	

RS AURIGAE 055646 a

1855.0; α $5^h\,53^m\,6^s$; δ $+46°\,15'.8$.

Comparison stars; a *Durchmusterung* map was used with one additional star. The magnitudes were obtained by comparison with B. D. 46° 1091, mg. 7.0, *Annals*, vol. 54. Star 2 is *Bonn A. G.* 4936.

Des.	Mg.	α 1900	δ 1900	B. D.
2	9.7	$5^h\ 55^m\ 44^s$	$+46°\ 38'.0$	46° 1087
1	10.2	56 8	27.4	1088
4	10.5	55 22	14.6	1085
21	12.0	56 30	12.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 4	8707.4	5	W	v = 4; 4 2 v	10.6	
Mar. 3	8734.4	5	W	4 5 v; v 5 21	11.2	
" 26	8757.4	12	F	1 3.5 v; v 2 4	10.4	
Apr. 10	8772.4	12	F	v = 1; v 2 4	10.2	
" 22	8784.4	12	F	v 4 1; 2 2 v	9.8	
1912						
Apr. 25	9518.5	12	F	2 4 v; v 2 1; v 4 4	10.1	

X AURIGAE 060450 VI

1855.0; α $6^h\,0^m\,55^s$; δ $+50°\,15'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 21	6592.4	3	W	v 6 2; v = 3	8.2	
" 21	6592.4	12	W	v 3 3	8.3	
1909						
Jan. 27	8334.4	5	W	16 5 v; v 4 20	10.4	
Feb. 13	8351.4	5	W	v = 16	10.1	
" 18	8356.4	5	S	v 3 16; 9 3 v	9.8	
" 22	8360.4	5	S	v 5 16; 9 1 v	9.6	
Mar. 5	8371.4	5	W	5 5 v; v 5 9	9.2	hazy
" 15	8381.4	5	—	v 1 5; 2 2 v	8.6	
" 22	8388.4	5	—	2 1 v; v 2 5	8.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 4	8401.4	5	W	v 5 5; v = 2	8.4	
" 12	8409.4	5	—	5 3 v; v 5 10	9.1	
" 24	8421.4	5	W	v 3 16; v = 9	9.7	
May 12	8439.4	12	F	26 2 v; v 2 29	11.6	
Dec. 10	8651.4	12	F	24 1.5 v; v 1.5 26	11.2	
1910						
Jan. 15	8687.3	12	F	5 5 v; v 3 9	9.2	
Feb. 10	8713.4	12	F	v 7 5; v 3 2	8.1	v quite red
Mar. 4	8735.4	12	F	v 2.5 24; 26 2 v; 26 4 v; 20 2 v	11.3	
" 26	8757.4	12	F	24 2 v; v = 26	11.4	
Apr. 10	8772.4	12	F	36 1 v; v 1 45	12.5	
" 22	8784.4	12	F	v about = 45	12.6 ±	v faint
" 30	8792.4	12	F	v = 36; v = 38	12.4	
1911						
Mar. 11	9107.4	12	F	v about = 26	11.4 ±	faint, moon
Apr. 18	9145.4	12	F	40 2 v; v 2 43	12.6	
" 29	9156.4	12	F	26 2 v; v = 29	11.7	
May 21	9178.4	12	F	9 2 v; v 4 16	9.8	
" 25	9182.4	12	F	5 2 v; v = 6	8.8	
1912						
Mar. 13	9475.4	5	S	v = 45	12.6	very faint
Apr. 10	9503.4	5	S	v = 16; v 2 20	10.2	
" 20	9513.4	5	S	5 6 v; v 3 9	9.3	
" 30	9523.4	5	S	5 1 v; v 2 6	8.7	moon
May 11	9534.4	5	S	v 2 2; v 3 5	8.4	
" 31	9554.4	5	S	2 2 v; v 1 5	8.6	low

RR AURIGAE 060443

1855.0; α $6^{h}\ 1^{m}\ 41^{s}$; δ $+43°\ 11'.3$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes were obtained by estimations based on no. 13, B. D. 43° 1475, mg. 7.1, *Annals*, vol. 54. The positions and magnitudes are given below. Star 2 is *Bonn A. G.* 5070.

Des.	Mg.	α 1900	δ 1900	B. D.
2	8.9	$6^{h}\ 4^{m}\ 58^{s}$	+43° 25′.6	43° 1480
11	9.2	4 28	6.5	1477
3	9.8	5 17	18.0	1481
1	10.4	4 57	16.1	1479
x	11.0	4 45	15.2	
z	12.0	4 48	12.9	
t	12.3	4 54	9.5	
r	12.3	5 4	9.1	
s	13.0	5 32	9.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 19	8691.4	5	W	*v* 4 x; 1 3 *v*	10.6	
Feb. 4	8707.4	5	W	*v* 12 1; *v* 1 11	9.2	
" 10	8713.4	5	W	11 3 *v*	9.5	
" 25	8728.4	5	W	11 10 *v*; *v* 4 1	10.1	
Mar. 3	8734.4	5	W	11 8 *v*; *v* 2 1	10.1	
" 26	8757.4	12	F	x 3 *v*; *v* 5 z	11.4	
Apr. 10	8772.4	12	F	z 0.5 *v*; t 1 *v*	12.2	
" 22	8784.4	12	F	*v* not seen; t seen	<12.3	low, moon
" 30	8792.4	12	F	r 5 *v*; *v* = s	12.9	
1912						
Apr. 25	9518.5	12	F	*v* not seen; z seen	<12.0	
" 30	9523.4	12	F	*v* not seen; z seen	<12.0	
May 3	9526.4	12	F	*v* not seen; est. .5 mg. < t	12.8	
" 10	9533.4	12	F	*v* on limit; s seen with diff.	13.2 ±	near hor.
Nov. 30	9737.4	12	F	*v* faint, = s	13.0	
Dec. 16	9753.4	12	F	*v* = s; both faint	13.0	m., v. clear

SS AURIGAE 060547

1855.0; α $6^h\ 2^m\ 24^s$; δ $+47°\ 46'.2$.

Comparison stars; letters and magnitudes taken from Harvard photograph and *Annals,* vol. 57. As magnitudes of u, w and y are not given with the others, they were determined by estimation and found to be u, 13.6; w, 13.8; y, 14.0.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Mar. 12	8013.4	12	W	*v* not seen; est. <11.5 at least	<11.5	moon
" 24	8025.4	12	W	*v* not seen; w seen	<13.8	
" 25	8026.4	12	W	*v* not seen; w seen	<13.8	
Apr. 3	8035.4	12	W	*v* not seen; w barely seen	<13.8	hazy
" 4	8036.4	12	W	*v* not seen; w clearly seen	<13.8	
" 6	8038.4	12	W	*v* not seen; w seen, not clearly	<13.8	
" 9	8041.4	12	W	*v* not seen; w seen	<13.8	moon
" 13	8045.4	12	W	*v* not seen; w barely seen	<13.8	
" 16	8048.4	12	W	*v* not seen; w just seen	<13.8	
" 19	8051.4	12	W	*v* not seen; w seen	<13.8	good seeing
" 22	8054.4	12	W	*v* not seen; w caught	<13.8	
" 24	8056.4	12	W	*v* not seen; t seen	<13.3	rather hazy
" 26	8058.4	5	W	*v* not seen; t u, w not seen	<12.0	good seeing

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
May 1	8063.4	12	W	g 1.5 *v*; g 3 *v*; *v* 2 o	11.2	
" 2	8064.4	12	W	g 2.5 *v*; *v* 1 m	11.1	low
" 3	8065.3	12	W	g 2 *v*; k 3 *v*; *v* 2.5 m	11.0	
" 10	8072.4	12	W	q 2 *v*	12.6	moon
" 17	8079.4	12	W	*v* not seen; q seen	<12.4	low
" 18	8080.4	12	W	*v* not seen; t seen	<13.3	low
" 25	8087.4	12	W	*v* not seen; w seen	<13.8	
Nov. 20	8266.4	5	W	*v* not seen	<12.0	good seeing
Dec. 18	8294.4	5	W	*v* not seen; q seen	<12.4	
1911						
Apr. 18	9145.4	12	F	*v* not seen; y glimpsed	<14.0	
" 24	9151.4	12	F	*v* not seen; y seen	<14.0	
" 29	9156.4	12	F	*v* not seen; w seen	<13.8	hazy
May 21	9178.4	12	F	f 2 *v*; *v* 1 g	10.7	
" 25	9182.4	12	F	g 3 *v*; l 2 *v*	11.2	clear
1912						
May 10	9533.4	12	F	*v* not seen; y possibly seen	<14.0	very clear
Dec. 3	9740.4	12	F	*v* not seen; w faintest seen	<13.8	
" 16	9753.4	12	F	*v* 2 q; o 6 *v*	12.2	

Note.—On dates 1908, April 26 and Nov. 20 no mention is made of the faintest star seen. As the 5-inch telescope was used and there was good seeing, the editor assumed that the magnitude was at least 12.0.

ST AURIGAE 060746

1855.0; α $6^h 4^m 0^s$; δ $+46° 49'.2$.

Comparison stars; three stars near the variable were used. Their positions and magnitudes are given below. The magnitudes were obtained by direct estimation.

Des.	Mag.	α 1900	δ 1900
z	12.4	6^h 7^m 26^s	+46° 50′.5
r	12.8	7 46	46.5
u	13.2	7 45	50.0

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Apr. 1	8763.4	12	F	z 3 *v*; *v* 6 n	12.6	
" 13	8775.4	12	F	r 3 *v*; *v* 2 n	13.0	
" 22	8784.4	12	F	*v* not seen; r seen	<12.8	
" 30	8792.4	12	F	*v* = n; r 4 *v*	13.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Apr. 30	9523.4	12	F	*v* not seen; z seen	<12.4	
May 10	9533.4	12	F	n 2 *v*	13.4	

W CAMELOPARDALIS 061275

1855.0; α $6^h\ 6^m\ 4^s$; δ $+75°\ 30'.5$.

Comparison stars; a *Durchmusterung* map was used with additional faint stars. The lettering is similar to that of Hartwig on a map in the *Ast. Nach.*, no. 4009, but other stars are also used. The magnitudes were determined by comparison and estimation, using as a basis the stars B. D. 75° 253, 8.1 mg. and B. D. 75° 251, 9.2 mg., *Annals*, vol. 54.

Des.	Mag.	α 1900			δ 1900	
f	9.6	6^h	11^m	48^s	$+75°$	$40'.1$
g	10.2		12	56		22.8
u	10.5		11	8		25.6
k	10.7		13	46		23.5
b	10.8		9	50		31.8
z	11.7		12	16		26.6
r	12.0		12	40		24.1
n	12.4		12	28		28.8
m	13.0		11	52		31.6
t	14.0		10	51		26.7

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Sept. 25	7114.4	12	W	u 4 *v*; *v* 8.5 z	10.9	
Oct. 30	7149.4	5	W	*v* 3 g; f 5 *v*	10.0	
Nov. 14	7164.4	—	W	*v* 2 u; f 5 *v*	10.2	moon
" 18	7168.4	12	W	g 1 *v*; *v* 1 u	10.4	
1906						
Jan. 27	7238.4	12	W	*v* glimpsed, <13.0; m barely seen	<13.0	
Mar. 24	7294.8	12	W	*v* not seen, est. <13.5	<13.5	
Oct. 13	7497.4	5	W	*v* on limit if seen, est. 12 ±	12.0 ±	
" 14	7498.4	12	W	*v* = z	11.7	
Nov. 6	7521.4	12	W	*v* on limit, est. 13.0	13.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Jan. 22	7598.4	12	W	*v* not seen; m faintest caught	<13.0	moon
May 20	7716.4	12	W	g 2 *v*; *v* 3 u	10.3	
" 20	7716.4	12	W	phot. comp. with a, g, u, b	10.4	
1908						
Feb. 7	7979.4	12	W	*v* just caught, est. 12.5	12.5	
Apr. 17	8049.4	12	W	g 2 *v*; f 6 *v*	10.3	hazy
1909						
Feb. 18	8356.4	12	F	b 3 *v*; *v* 8 z	11.0	
Mar. 5	8371.4	12	F	*v* 0.5 z; *v* est. 12.2+	11.9±	ft. in moon
" 14	8380.4	12	F	z 2.5 *v*; *v* 2 n	12.1	clouds
Apr. 9	8406.4	12	F	m 4 *v*; *v* est. 13.5	13.4	
" 16	8413.4	12	F	*v* not seen; m faintest seen	<13.0	
" 24	8421.4	12	F	t 4 *v*; n 1.8 mg. *v*; *v* est. 14.15	14.2	
May 11	8438.4	12	F	t 3 *v*; *v* est. 14.2	14.2	
" 23	8450.5	12	F	*v* not seen; m faintest seen	<13.0	
June 15	8473.4	12	F	*v* not seen; t faintest seen	<14.0	
Sept. 18	8568.4	12	F	*v* 1 n; *v* 2 m	12.6	
Oct. 16	8596.4	12	F	*v* 1.5 u; g 4 *v*	10.5	
Nov. 18	8629.4	12	F	*v* 2 g	10.0	
Dec. 9	8650.4	12	F	g 2.5 *v*; *v* 3.5 b	10.4	
1910						
Jan. 10	8682.4	12	F	*v* 1 n	12.3	
Feb. 1	8704.4	12	F	n 6 *v*; *v* 4 t	13.3	
" 10	8713.4	12	F	*v* = t	14.0	faint
Mar. 3	8734.4	12	F	*v* not seen; t faintest seen	<14.0	
" 26	8757.3	12	F	*v* not seen; m faintest seen	<13.0	
Apr. 30	8792.4	12	F	*v* not seen; t faintest seen	<14.0	very clear
Oct. 3	8948.4	12	F	*v* = g	10.2	
" 21	8966.4	12	F	*v* 1 n 2 m	12.1	ft. in moon
" 31	8976.3	12	F	n 2 *v*; *v* 4 t	13.1	
Nov. 19	8995.4	12	F	*v* not seen; n faintest seen	<12.4	
Dec. 2	9008.4	12	F	t 2 *v*	14.2	near limit
1911						
Jan. 16	9053.3	12	F	*v* not seen; m faintest seen	<13.0	moon
" 24	9061.3	12	F	*v* not seen; t faintest seen	<14.0	
Feb. 21	9089.4	12	F	*v* not seen; t seen easily	<14.0	
Apr. 18	9145.4	12	F	m 4 *v* 4 t	13.5	
" 26	9153.4	12	F	n 3 *v*; m 1.5 *v*	12.9	
May 18	9175.4	12	F	u 6 *v*; *v* 8 z	11.0	
" 26	9183.4	12	F	g 2 *v*; *v* = u	10.4	fine seeing
Oct. 16	9326.4	12	F	t 2 *v*	14.2	on limit
Nov. 16	9357.4	12	F	*v* not seen; t faintest seen	<14.0	
Dec. 13	9384.4	12	F	*v* not seen; t faintest seen	<14.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Jan. 20	9422.3	12	F	*v* = t	14.0	glimpsed
Feb. 8	9441.3	12	F	m 2 *v*; *v* 4 t	13.4	
Mar. 13	9475.4	12	F	*v* 2 u; g = *v*	10.2	
Apr. 19	9512.4	12	F	g 2 *v*; *v* 2 k	10.4	
May 3	9526.4	12	F	*v* = u	10.5	
June 3	9557.5	12	F	*v* = r	12.0	
" 7	9561.4	12	F	z 6 *v*; *v* 2 n	12.2	very clear
" 12	9566.4	12	F	z 2 *v*; *v* 2 n	12.0	
Nov. 1	9708.4	12	F	t 2 *v*; *v* est. 14.2	14.2	very clear
" 18	9725.3	12	F	*v* not seen, est. .3 mg. <m	<13.3	on limit, m.
" 30	9737.3	12	F	n 4 *v*; *v* 2 t	13.3	
Dec. 12	9749.3	12	F	n 2 *v* 2 m	12.7	

V AURIGAE 061647 III

1855.0; α $6^h\ 13^m\ 4^s$; δ $+47° 46'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 234. As no Hagen grade is given for star no. 1, its magnitude, 8.1, was taken from *Annals*, vol. 57, p. 234. The co-ordinates of the magnitude curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Feb. 22	7264.4	12	W	*v* 10 20; *v* 8 17	10.2	*v* red
1907						
Apr. 15	7681.4	5	W	9 4 *v*; *v* 5 15	10.1	
May 1	7697.4	12	W	9 2 *v*; *v* 2 12	9.8	low
" 14	7710.4	—	W	*v* 7 20; 9 5 *v*; *v* = 15	10.4	too low
Oct. 31	7880.4	12	W	*v* = 23	11.7	
Dec. 12	7922.4	5	W	doubtful if seen; 27 seen	<12.2	
1909						
Jan. 21	8328.4	5	W	*v* 8 20; 9 3 *v*	10.2	
Feb. 17	8355.4	5	W	*v* = 9; 7 1 *v*	9.6	
" 25	8363.4	5	W	*v* = 9; 7 1 *v*	9.6	
Mar. 5	8371.4	5	W	*v* 1 9; *v* = 7	9.5	hazy
" 18	8384.4	12	W	*v* 2 5; 1 7 *v*	9.0	
Apr. 4	8401.4	5	W	*v* = 9	9.7	
" 22	8419.4	5	W	9 5 *v*; *v* 2 15	10.3	
1910						
Jan. 12	8684.4	5	W	6 5 *v*; *v* 5 17	10.1	
Feb. 4	8707.4	5	W	*v* 5 7; *v* 3 5	9.0	
" 12	8715.4	5	W	*v* 3 7; 6 1 *v*	9.2	
" 25	8728.4	5	W	*v* 5 7; *v* 3 5; 1 6 *v*	8.9	
Mar. 5	8736.4	5	W	*v* 3 7; *v* 1 5	9.2	
" 26	8757.4	12	F	7 2 *v*; *v* 2 9	9.6	
Apr. 10	8772.4	12	F	*v* 4 9; *v* 2 7	9.2	*v* red
" 22	8784.4	12	F	*v* 6 12; *v* 4 7; *v* 2 6	9.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Mar. 11	9107.4	12	F	*v* 6 15; 9 8 *v*	10.2	
Apr. 18	9145.4	12	F	*v* = 12	10.0	fine seeing
" 29	9156.4	12	F	17 2 *v*; *v* 4 20	11.0	
May 21	9178.4	12	F	15 1 *v*; *v* 2 20	10.8	poor
" 25	9182.4	12	F	17 4 *v*; 20 2 *v*	11.4	very clear

Note.—The red color of this star, which is several times referred to in the remarks, interfered with the accuracy of the comparisons.

V MONOCEROTIS *061702* VI

1855.0; α $6^h\ 15^m\ 25^s$; δ $-2°\ 7'.6$.

Comparison stars; since this star is in Hagen Series VI, the magnitudes would ordinarily be taken from the column headed H. P., but the magnitudes of the fainter stars there given did not agree with those obtained by observation. Hence it was necessary to change the lower end of the scale. This was done by drawing a curve based on Hagen grades and Harvard magnitudes from *Annals,* vol. 57, p. 234, as far as Hagen no. 48, together with the magnitudes of 69 and 73, which were found by observation to be 12.6 and 12.8 respectively. The co-ordinates of this curve will be found in Table III. Star 72 was found by observation to be fainter than 73, and was assigned magnitude 13.0.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 19	8691.4	5	W	*v* not seen; 46 seen	<11.3	moon
Feb. 4	8707.4	12	F	73 2 *v*	13.0	
" 12	8715.4	12	F	73 6 *v*; *v* est. 14.0	13.7	
Mar. 3	8734.4	12	F	54 3 *v*; *v* 2 72	12.5	
" 23	8754.4	12	F	40 2 *v*	11.2	faint, moon
Apr. 9	8771.4	12	F	*v* = 39; *v* = 44	11.1	
" 22	8784.4	12	F	*v* = 31; *v* 4 39	10.6	faint, moon
" 26	8788.4	12	F	*v* = 26	10.4	

T MONOCEROTIS 061907 V

1855.0; α $6^h\ 17^m\ 24^s$; δ $+7^\circ\ 9'.7$.

Comparison stars; Schurig's Atlas was used. The comparison stars were later identified on a Hagen chart, and his numbers adopted. The magnitudes were taken from column H. P.

Hagen 60 5.4 mg. *l* Orionis.
Hagen 85 6.2 mg.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241						
Nov. 23	7173	10^h 15^m	—	W	60 2 v; v 2 85	5.8	opera glass?
" 25	7175	10 50	—	W	v 2 85; 60 5 v	6.0	opera glass?

RV AURIGAE 062742

1855.0; α $6^h\ 24^m\ 23^s$; δ $+42^\circ\ 36'.5$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes were obtained by comparison with stars on map of V Aurigae, which is quite near by.

Des.	Mag.	B. D.
6	7.7	+42° 1577
9	8.8	1580
3	9.2	1574
2	9.8	1573
8	10.1	1579
4	10.3	1575

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Mar. 4	8735.4	5	W	v 3 2; 9 3 v	9.3	
Apr. 1	8763.4	12	F	v = 2	9.8	red
" 10	8772.4	12	F	v 3 2; v 6 4	9.6	
" 22	8784.4	12	F	v 3.5 2; 3 2 v	9.4	
1912						
Apr. 30	9523.4	12	F	6 10 v; v 5 9	8.5	redness 7
May 3	9526.4	12	F	9 2 v; v 4 2	9.2	
" 10	9533.4	12	F	v = 9; v 4 2	9.1	

Note.—The redness of this star was estimated to be 7 on a scale of 10.

NOVA GEMINORUM No. 1 063730

1855.0; α $6^h\ 34^m\ 56^s$; δ $+30°\ 5'.0$.

Comparison stars; six stars on a *Durchmusterung* map were used, to which letters were assigned by the observer. These were later compared with the list given by Parkhurst, *Astroph. Jour.*, v. 17, p. 374, and his magnitudes adopted from column H for the four stars used by him. Of the other two, one was found in *Annals*, v. 54, and the other, l, was compared photometrically with g. The list is given below.

Des.	Mg.	B. D.		Authority
a	7.13	30°	1318	Parkhurst, g
j	7.36	29	1307	Parkhurst, l
e	7.79	29	1342	Parkhurst, b
k	7.99	31	1413	Annals, v. 54
g	9.09	30	1306	Parkhurst, d
l	10.49	30	1309	Phot. comp. with g

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241							
Apr. 1	6206	8h	0m	12	W	e 3 *v*; *v* 3 g	8.4	
" 4	6209	8	0	12	W	*v* = g; *v* 1 g	9.0	moon, hazy
May 2	6237	9	30	12	W	phot. comp. with a	8.90	
" 12	6247	8	0	5	W	g 4 *v*; *v* 3 l	9.8	
" 13	6248	9	0?	12	W	phot. comp. with a, k, j,	9.86	
" 13	6248	9	0?	12	W	g 3 *v*; *v* 3 l	9.8	
" 19	6254	9	12	12	W	phot. comp. with g and l	10.26	low, hazy
" 21	6256	9	0?	12	W	phot. comp. with g and l	10.28	low
" 23	6258	8	40	12	W	phot. comp. with g and l	10.41	
" 25	6260	8	45	12	W	phot. comp. with g and l	10.57	low, diff.

X GEMINORUM 064030 VI

1855.0; α $6^h\ 37^m\ 50^s$; δ $+30° 25'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Jan. 25	5775.4	5	W	7 2 v; v 3 14	9.8	moon
May 1	5871.4	5	W	v = 39; 23 5 35 5 v	12.0	
1910						
Jan. 10	8682.4	5	W	v 1 3; 3 1 v	8.0	
Feb. 1	8704.4	5	W	3 6 v; v 1 6	8.7	
" 12	8715.4	5	W	v = 7	9.4	
Mar. 4	8735.4	5	W	v 2 35	11.3	
" 26	8757.4	12	F	v 2 49; 46 2 v	12.6	
Apr. 13	8775.4	12	F	49 4 v; 59 2 v	13.2	
" 30	8792.4	12	F	49 3 v; 59 1 v; v = 63	13.2	
May 7	8799.4	12	F	v 1 59; 49 3 v	13.0	
" 18	8810.4	12	F	v not seen; 56, seen	<12.9	
1911						
Mar. 11	9107.4	12	F	v = 49	12.7	
Apr. 11	9138.4	12	F	v 4 34; v 1 30	11.0	
" 24	9151.4	12	F	15 4 v; v 6 26	10.6	
May 5	9162.4	12	F	v 5 15; v 2 9	9.6	moon 7 days
" 13	9170.4	12	F	6 6 v; 8 2 v; v 2 9	9.5	
" 14	9171.4	12	F	v 6 9; 8 4 v	9.4	
" 25	9182.4	12	F	v 2 4; 3 7 v	8.4	low
1912						
Apr. 11	9504.4	5	S	3 4 v; v 1 6	8.6	

NOVA GEMINORUM No. 2 064932

1855.0; α $6^h\ 45^m\ 30^s$; δ $+32° 19'.0$.

Comparison stars; this was first identified on Schurig's Atlas, but later a *Durchmusterung* map was used. The magnitudes are found in *Annals*, vol. 50 and 54.

ι Gem.	4.5 mg.;	B. D. 30°	1439
49 Aur.	5.0	28	1168
28 Gem.	5.5	29	1293
2	5.8	32	1414
3	6.0	33	1433
1	6.5	32	1460
4	6.9	32	1433

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Mar. 19	9481.3	—	F	49 Aur. 1 *v*; *v* 3 28 Gem.	5.2	naked eye
" 19	9481.3	—	S	49 Aur. 2 *v*; *v* 3 28 Gem.	5.2	naked eye
" 20	9482.4	—	S	49 Aur. 2 *v*; *v* 3 28 Gem.	5.2	naked eye
" 22	9484.4	—	S	t Gem. 4 *v*; *v* 1 49 Aur.	4.9	naked eye
" 22	9484.4	—	F	t Gem. 3 *v*; *v* 1.5 49 Aur.	4.8	naked eye
Apr. 11	9504.4	0	F	1 2 *v*; *v* 2 4	6.7	
" 16	9509.4	0	S	2 1 *v*; *v* 1 1	6.2	
" 19	9512.4	0	F	3 2 *v*; *v* 2 1	6.2	
" 20	9513.4	0	F	3 4 *v*; *v* 2 4	6.6	

Y MONOCEROTIS 065111 VI

1855.0; α $6^h\,48^m\,49^s$; δ $+11°\,25'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P. Three additional faint stars were used whose positions and magnitudes are given below.

Des.	Mag.	α 1900	δ 1900
x	13.2	$6^h\ 51^m\ 22^s$	+11° 24′.3
z	13.5	51 30	21.6
y	13.7	51 27	23.6

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 19	8691.4	5	W	*v* not seen; 40 seen	<11.7	
Feb. 4	8707.4	12	F	*v* = 34; *v* 3.5 40	11.3	
" 12	8715.4	12	F	*v* 2.5 32; 26 1.5 *v*	10.6	
" 25	8728.4	12	F	*v* 1 26; *v* 2 28	10.4	
Mar. 5	8736.4	12	F	*v* = 12; 10 2 *v*	9.3	
" 23	8754.4	12	F	10 4 *v*; 12 2 *v*	9.5	
Apr. 9	8771.3	12	F	*v* 1 10; 8 6 *v*	9.2	
" 22	8784.4	12	F	*v* = 10	9.1	
May 7	8799.4	12	F	*v* 3 28; *v* 1.5 26	10.4	
1911						
Jan. 28	9065.4	12	F	*v* = 40	11.7	
Feb. 16	9084.3	12	F	44 4 *v*; 47 2 *v*; *v* 2 x	12.6	
" 27	9095.3	12	F	x 1 *v*; *v* 2 z	13.3	
Apr. 11	9138.4	12	F	*v* = x; *v* = y; 49 8 *v*	13.4	
" 15	9142.4	12	F	49 2 *v*; *v* 2 x	12.8	
" 25	9152.4	12	F	40 4 *v*; *v* 2 47	12.0	
May 5	9162.4	12	F	*v* = 40; *v* 2 40; 34 4 *v*	11.6	
" 14	9171.4	12	F	26 2 *v*; *v* 2 32	10.7	
" 25	9182.4	12	F	*v* = 26	10.5	low, faint
1912						
Apr. 20	9513.4	12	F	*v* = 45	12.2	
May 4	9527.4	12	F	*v* = 49; 48 1 *v*	12.4	
" 10	9533.4	12	F	*v* 4 x; 49 2 *v*	12.7	very clear

S GEMINORUM 065820 V

1855.0; α 6h 55m 30s; δ +20° 46.7.

Comparison stars; Schurig's Atlas was used. The magnitudes of the comparison stars were taken from *Annals,* vol. 50.

δ	Geminorum	3.5 mg.
κ	Geminorum	3.7
ν	Geminorum	4.1
υ	Geminorum	4.2

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241							
Feb. 13	7255.3	8h	—	—	W	υ 3 v; v 1 ν	4.2	naked eye
" 28	7270.4	8	25m	—	W	κ 2 v; v 4 ν	3.8	naked eye
Mar. 12	7282.3	7	15	—	W	v 2 ν; δ 4 υ	3.9	naked eye

R GEMINORUM 070122a II

1855.0; α 6h 58m 37s; δ +22° 55′.4.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
Dec. 11	5730.4	12	W	v 3.5 31; v = 28	11.2	
" 18	5737.4	5	W	v 0.5 31	11.4	
1902						
Jan. 4	5754.4	12	W	v 5 39; 31 3 v; v = 38	11.8	
" 13	5763.5	5	W	v = 38	12.0	barely seen
" 27	5777.4	5	W	v = or <40	<12.0	40 just seen
" 28	5778.4	12	W	v 2 54; v = 49	12.6	
Feb. 15	5796.4	12	W	49 4 v; v 0.5 54	12.9	
1903						
Jan. 10	6125.4	12	W	v not seen; 28, 38, seen	<12.0	moon
" 21	6136.4	12	W	v = 40	12.0	
Mar. 19	6193.4	5	W	v not seen; 40 seen	<12.0	
" 26	6200.4	12	W	v < 56	<13.1	56 just seen
May 2	6237.4	12	W	v not seen; 22 seen	<10.6	low, moon
1904						
Jan. 9	6489.4	—	W	v 3 31; v 6 34; v = 24	11.1	
Apr. 7	6578.4	—	W	v not seen; 38, 40, seen	<12.0	
1906						
Mar. 14	7284.4	12	W	v 2 54; v = 49	12.6	good seeing

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Mar. 10	8011.4	12	W	v not seen; 40 seen	<12.0	moon
" 21	8022.4	5	W	v not seen; 40 seen	<12.0	
Apr. 4	8036.4	12	W	$v = 56$	13.1	
" 17	8049.4	12	W	v not seen; 54 seen	<12.9	moon
May 3	8065.3	12	W	v not seen; 56 seen	<13.1	
" 18	8080.4	12	W	v not seen; 56 glimpsed	<13.1	low
1911						
Jan. 28	9065.4	12	F	v 3 28; 19 6 v	11.0	
Feb. 16	9084.3	12	F	28 1 v; v 2 31	11.4	
" 27	9095.3	12	F	31 2 v; v 4 39	11.6	
Apr. 11	9138.4	12	F	v 2 54	12.7	
" 25	9152.4	12	F	$v = 56$; v est. 13.5+	13.3	faint
May 5	9162.4	12	F	v not seen; 31, 39, 40, seen	<12.0	moon 7 days
" 14	9171.4	12	F	v not seen; 54 glimpsed	<12.9	
" 25	9182.4	12	F	v not seen; 56 glimpsed	<13.1	low

V CANIS MINORIS 070109 VI

1855.0; α $6^h 59^m 5^s$; δ $+9° 5'.4$.

Comparison stars; a Hagen chart was used, with the assistance of a Parkhurst photograph. As the variable happened always to be faint, only four comparion stars were used, three of which are found in *Annals*, vol. 57. The position of t was obtained from the Parkhurst photograph. The magnitudes were determined by direct estimation.

Des.	Mg.	α 1900	δ 1900	Harv.
t	13.3	7^h 1^m 34^s	+9° 3'.8	
x	13.5	1 45	2.0	r
y	14.0	1 37	0.4	s
z	14.1	1 37	1.7	t

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Mar. 3	8734.4	12	F	v not seen; z seen	<14.1	
Apr. 1	8763.4	12	F	v not seen; z seen	<14.1	z on limit
" 13	8775.4	12	F	v not seen; x seen	<13.5	
" 26	8788.4	12	F	v not seen; z glimpsed	<14.1	
1911						
Jan. 28	9065.4	12	F	v = x; t 2 v	13.5	
Feb. 16	9084.3	12	F	v = y	14.0	
" 28	9096.4	12	F	v on extreme limit, est. 14.2	14.2	fine seeing
Apr. 11	9138.4	12	F	v not seen; x seen	<13.5	
" 15	9142.4	12	F	v not seen; x seen	<13.5	moon
" 25	9152.4	12	F	v not seen; z seen	<14.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Feb. 6	9439.4	12	F	x 3 *v*; *v* est. 13.3	13.6	
Mar. 7	9469.4	12	F	*v* on limit, est. 14.2; z seen	14.2	very clear
Apr. 10	9503.4	12	F	*v* not seen, est. <14.2; z seen	<14.2	fine seeing
" 19	9512.4	12	F	*v* not seen, est. <14.2; z seen	<14.2	very clear
May 11	9534.4	12	F	*v* not seen; x seen	<13.5	hazy

R CANIS MINORIS 070310 IV

1855.0; α $7^m 0^h 44^s$; δ $+10° 14'.9$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Feb. 11	6888.4	5	W	38 3 *v*	10.6	
Apr. 22	6958.4	5	W	7 3 *v*; *v* 4 13	8.8	
1906						
Jan. 29	7240.4	12	W	16 6 *v*; *v* 4 29	9.8	
Feb. 16	7258.4	12	W	7 8 *v*; *v* 5 16	9.2	
" 28	7270.4	—	W	7 5 *v*; *v* 5 16	9.0	
1909						
Feb. 6	8344.4	5	W	*v* 4 7; *v* = 6	8.1	
" 25	8363.4	12	W	*v* 2 7	8.3	
" 25	8363.4	5	W	*v* 4 7	8.1	
Mar. 11	8377.4	5	W	*v* = 7	8.5	
" 26	8392.4	5	W	7 2 *v*; *v* 7 16	8.8	
Apr. 11	8408.4	5	W	*v* 4 12; 7 3 *v*	8.8	
" 23	8420.4	5	W	14 2 *v*; *v* 3 21	9.5	

RU CAMELOPARDALIS 071069

1855.0; α $7^h 5^m 59^s$; δ $+69° 55'.6$.

Comparison stars; a *Durchmusterung* chart was used. The magnitudes were obtained by estimation, based on 69°, 422, mg. 7.9, *Annals*, vol. 54, and 69°, 421, mg. 9.8, *Annals*, vol. 70.

Des.	Mag.	B. D.
p	7.9	69° 422
r	8.7	70 450
n	8.8	69 420
w	8.9	70 447
x	9.1	70 448
o	9.8	69 421

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Jan. 29	7970.4	5	W	v 3 t; p 4.5 v	8.4	
Feb. 6	7978.4	5	W	v 4 t; p 5 v	8.4	
" 17	7989.4	—	W	n 1.5 v; w 1 v; t 1 v	8.9	moon
Mar. 7	8008.4	5	W	v = x; n 3 v	9.1	
" 21	8022.4	5	W	v 2 t; p 4 v	8.4	
Apr. 6	8038.4	5	W	v 2 t; p 4.5 v	8.4	
" 17	8049.4	5	W	w 1 v	9.0	
" 22	8054.4	5	W	w 4 v; v 3 o	9.4	
" 23	8055.4	5	W	w 4 v; v 3 o	9.4	

V GEMINORUM 071713 II

1855.0; α $7^h\ 15^m\ 2^s$; δ $+13°\ 21'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 237. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 16	6577.4	12	W	phot. comp. with 3	8.3	
1905						
Jan. 14	6860.4	—	W	7 2 v; v 5 11	9.4	
Mar. 14	6919.4	12	W	v = 47; both on limit	12.2	moon
1906						
Feb. 16	7258.4	12	W	v perhaps caught; <69	<13.3	
Mar. 14	7284.4	12	W	v not seen; 68 and 69 seen	<13.3	
1907						
Apr. 11	7677.4	5	W	3 3 v; v 8 6; v 5 5	8.4	
" 18	7684.4	12	W	3 1 v	8.2	
" 24	7690.4	5	W	3 3 v; v 4 6	8.6	
May 1	7697.4	12	W	3 8 v; v 6 7	8.8	
" 11	7708.4	5	W	7 2 v; v 2 14	9.6	
1910						
Feb. 10	8713.4	5	W	27 3 v	11.4	v uncertain
Mar. 4	8735.4	5	W	v = 37	11.6	
Apr. 1	8763.4	12	F	v = 14	9.8	
" 13	8775.4	12	F	3 4 v; v 6 7	8.6	
" 22	8784.4	12	F	v = 2	8.0	
May 5	8797.4	12	F	v = 2	8.0	
" 18	8810.4	12	F	3 4 v; 2 6 v	8.6	
1911						
Apr. 18	9145.4	5	S	v = 37	11.6	barely seen
" 25	9152.4	12	F	37 2 v; v 2 40	11.8	
May 14	9171.4	12	F	47 and v faintest seen	12.2 ±	
" 25	9182.4	12	F	v not seen; 63 seen	<12.9	low

S CANIS MINORIS 072708 II

1855.0; α $7^h\ 24^m\ 51^s$; δ $+8°\ 37'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Mar. 22	8388.4	12	F	23 2 *v*; *v* 6 34	11.0	
Apr. 11	8408.4	5	W	*v* = 16	10.2	
" 24	8421.4	5	W	*v* = 9	9.6	
May 23	8450.4	12	F	3 4 *v*; *v* 4 4	8.6	
1910						
Mar. 7	8738.4	5	W	18 4 *v*; *v* 3 30	10.8	

T CANIS MINORIS 072811 II

1855.0; α $7^h\ 25^m\ 56^s$; δ $+12°\ 3'.0$.

Comparison stars; Hagen numbers used. The magnitudes of all but the faintest stars were read from a curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 237. As those of the faintest stars did not agree with the results obtained by observation, the curve was ended with star 43, and the magnitudes of the remaining stars used were found by direct estimation and inter-comparison. The co-ordinates of the curve will be found in Table III.

Hagen, 52,	12.4 mg.
47,	12.6
51,	12.8
55,	12.8
57,	13.0
64,	13.3
66,	13.3
63,	13.4
68,	13.5
69,	13.6

Three additional faint stars, taken from a Parkhurst photograph, were also used. Their positions and magnitudes are as follows:

Des.	Mg.	α 1900	δ 1900
x	13.8	$7^h\ 28^m\ 36^s$	+11° 56′.7
y	14.0	28 22	57.7
z	14.2	28 34	58.3

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Mar. 14	8380.4	5	W	*v* not seen; 43 faintest seen	<11.8	clouds
" 22	8388.4	12	F	*v* not seen; y seen	<14.0	
Apr. 9	8406.4	12	F	*v* not seen; y seen	<14.0	fine seeing
" 16	8413.4	12	F	*v* not seen; y seen	<14.0	fine seeing
" 23	8420.4	12	F	*v* not seen; 69 faintest seen	<13.6	low
May 8	8435.4	12	F	*v* not seen; 64 seen	<13.3	
" 9	8436.4	12	F	*v* not seen; 69 seen	<13.6	
" 11	8438.4	12	F	*v* not seen; y seen	<14.0	
" 23	8450.4	12	F	*v* not seen; 57 faintest seen	<13.0	moon
1910						
Feb. 4	8707.5	12	F	*v* not seen; y seen	<14.0	
" 12	8715.4	12	F	*v* not seen; z seen	<14.2	fine seeing
Mar. 3	8734.4	12	F	*v* not seen; y seen	<14.0	
Apr. 1	8763.4	12	F	*v* not seen; y seen	<14.0	
" 13	8775.4	12	F	*v* not seen; 69 seen	<13.6	
" 26	8788.4	12	F	*v* = 69	13.6	
1911						
Jan. 28	9065.4	12	F	*v* not seen; z seen	<14.2	fine seeing
Feb. 16	9084.3	12	F	*v* not seen; z seen	<14.2	fine seeing
" 28	9096.4	12	F	*v* not seen; z seen	<14.2	
Apr. 11	9138.4	12	F	*v* not seen; 69 seen	<13.6	
" 15	9142.4	12	F	*v* not seen; 69 seen	<13.6	
" 25	9152.4	12	F	51 2 *v*; *v* 2 63	13.1	
May 5	9162.4	12	F	*v* = 47; *v* = 52	12.5	cloudy
" 14	9171.4	12	F	38 6 *v*; *v* 2 52	12.2	faint
" 25	9182.4	12	F	38 2 *v* 2 43	11.6	low
1912						
Feb. 6	9439.4	12	F	69 2 *v*; *v* est. 13.8	13.8	
Mar. 7	9469.4	12	F	57 3 *v*; *v* 2 63	13.2	very clear
Apr. 10	9503.4	12	F	32 5 *v*; *v* 3 38	11.2	
" 19	9512.4	12	F	29 3 *v*; *v* 2 33	10.8	
" 30	9523.4	5	S	*v* = 26	10.3	moon
May 11	9534.4	12	F	15 2 *v*; *v* 4 29	10.0	misty
" 17	9540.4	12	F	21 2 *v*; *v* 2 29	10.4	

Y GEMINORUM 073520

1855.0; α $7^h\ 32^m\ 37^s$; δ +20° 45′.3.

Comparison stars; a *Durchmusterung* chart was used. The magnitudes were found by estimation, based on No. 22, which is found in *Annals,* vol. 54. The magnitudes are given below.

The variable was difficult of observation on account of its redness, which was estimated 4 on a scale of 10.

Des.	Mg.	B. D.
25	9.1	20° 1863
22	9.3	1868
19	9.4	1871
d	9.9	1895
26	10.1	1865
8	10.3	1883
16	10.3	1874
17	10.4	1873

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
May 13	5883.4	5	W	$v = 25$	9.1	
“ 14	5884.4	5	W	$v = 25$	9.1	
“ 16	5886.4	5	W	$v = 25$	9.1	moon bright
1904						
Jan. 9	6489.5	12	W	v 5 16; $v = d$	9.8	
“ 18	6498.4	12	W	phot. comp. with 16 and d	9.8	
Feb. 12	6523.4	12	W	phot. comp. with 16 and 26	9.9	
Apr. 15	6586.4	12	W	phot. comp. with 26	9.8	
May 30	6631.4	12	W	phot. comp. with 16, 26, and d	9.8	
1910						
Feb. 10	8713.4	5	W	v 3 26; 25 6 v	9.8	
Apr. 1	8763.4	12	F	$v = 17$	10.4	
“ 13	8775.4	12	F	$v = 16$	10.3	
“ 22	8784.4	12	F	v 5 8; 25 6 v	9.8	
May 7	8799.4	12	F	25 4 v; v 2 16	9.8	
“ 18	8810.4	12	F	19 2.5 v; v 1.5 16	9.9	
1912						
May 2	9525.4	12	F	$v = 25$	9.1	
“ 11	9534.4	12	F	v 2 19; 25 2 v	9.2	
“ 17	9540.4	12	F	$v = 25$	9.1	

U CANIS MINORIS 073508 II

1855.0; α $7^h 33^m 28^s$; δ $+8° 42'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 238. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Mar. 11	8377.4	5	W	3 8 v; 5 3 v	9.8	
“ 26	8392.4	5	W	3 4 v; v 6 8	9.4	
Apr. 11	8408.4	5	W	3 2 v; v 2 5	9.3	
“ 23	8420.4	5	W	$v = 3$	9.1	
1911						
Jan. 28	9065.4	12	F	55 2 v; v 2 65	12.8	fine seeing
Feb. 16	9084.3	12	F	$v = 20$; v 2 17	10.8	
“ 28	9096.4	12	F	3 10 v; v 6 10	9.8	
Apr. 11	9138.4	12	F	3 2 v	9.3	
“ 25	9152.4	12	F	3 6 v; v 8 10	9.6	
“ 26	9153.4	5	S	$v = 3$; 1 4 v	9.0	
May 21	9178.4	12	F	3 7 v; v 4 10	9.8	low
“ 25	9182.4	12	F	5 6 v; v 4 10	10.0	low
1912						
Mar. 7	9469.4	12	F	$v = 60$	12.8	

S GEMINORUM 073723 II

1855.0; α $7^h\,34^m\,20^s$; δ $+23°\,47'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 238. The co-ordinates of this curve will be found in Table III. Two additional faint stars were used, the positions of which were obtained by location on the Hagen chart. The magnitudes were obtained by direct estimation. These stars were found also on Wolf-Palisa plate, no. 108.

x: 13.8 mg., 1900 α $7^h\,36^m\,50^s$, δ $+23°\,43'.4$;
y: 14.1 37 1 44 .0.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Feb. 12	6523.4	12	W	$v = 58$	13.2	poor
“ 13	6524.4	12	W	v 2 58	13.0	
Apr. 14	6585.4	—	W	$v = 25$	11.1	
1906						
Jan. 17	7228.4	3	W	v 7 15; 9 8 v	9.6	finder used
Mar. 1	7271.4	—	W	$v = 37$; v 4 40	11.9	
1907						
Apr. 18	7684.4	12	W	v not seen; 40 seen	<12.2	
1908						
Jan. 27	7968.4	5	W	v not seen; est. <12.0	<12.0	
“ 30	7971.4	12	W	v not seen; 62 seen	<13.6	poor seeing
Mar. 21	8022.4	5	W	v, just caught, $= 55$	13.0	
“ 29	8030.4	5	W	$v > 55$	>13.0	
Apr. 13	8045.4	12	W	28 2 v; v 5 40	11.6	moon
May 3	8065.3	12	W	v 5.5 15; 9 3 v	9.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 10	8713.4	5	W	*v* = 15	10.1	
Mar. 4	8735.4	5	W	*v* 2 37	11.8	
Apr. 1	8763.4	12	F	*v* = 40; *v* = 39	12.2	
" 13	8775.4	12	F	*v* 4 62; 40 8 *v*	13.1	
" 26	8788.4	12	F	*v* = 62	13.6	
May 7	8799.4	12	F	62 2 *v*; both very faint	13.8	
" 18	8810.4	12	F	*v* not seen; 40 seen	<12.2	
1911						
Jan. 28	9065.4	12	F	*v* = 62	13.6	fine seeing
Feb. 16	9084.3	12	F	*v* on limit, = x	13.8	fine seeing
" 28	9096.4	12	F	*v* very faint, = y	14.1	fine seeing
Apr. 11	9138.4	12	F	59 (easy) 4 *v*; *v* on limit	<13.7	
" 25	9152.4	12	F	*v* not seen; x seen	<13.8	
May 14	9171.4	12	F	*v* not seen; 59 seen	<13.3	
" 25	9182.4	12	F	*v* not seen; x faintest seen	<13.8	
1912						
Apr. 19	9512.4	12	F	*v* = 15	10.1	
May 11	9534.4	12	F	7 2 *v*; *v* 3 9	8.6	
" 17	9540.4	12	F	*v* = 7; *v* 5 9	8.4	
Dec. 16	9753.4	12	F	*v* not seen; y faintest seen	<14.1	m., v. clear

T GEMINORUM 074323 II

1855.0; α $7^h\ 40^m\ 36^s$; δ $+24^\circ\ 5'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 238. One additional star was used, d, B. D. 24°, 1766, mag. 8.69, *Annals*, vol. 54. The co-ordinates of the magnitude curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Jan. 9	6489.5	12	W	*v* = 8	9.3	
" 15	6495.4	—	W	*v* 2 8; d 2 *v*	9.0	
Feb. 12	6523.4	12	W	phot. comp. with 8	9.0	
Mar. 30	6570.4	12	W	phot. comp. with 8	8.9	
Apr. 16	6587.4	12	W	phot. comp. with 8 and 15	10.5	
1906						
Jan. 18	7229.3	12	W	*v* not seen; 41 and 45 just seen	<13.3	
Mar. 1	7271.4	12	W	22 5 *v*	12.1	
1907						
Apr. 3	7669.4	—	W	*v* = 6	8.7	
" 18	7684.4	12	W	*v* 2 6	8.5	
May 1	7697.4	12	W	4 4 *v*; 6 2 *v*; *v* 4 8	8.8	
1908						
Jan. 30	7971.4	12	W	*v* 2 8; 6 2 *v*	9.0	poor seeing
Apr. 13	8045.4	12	W	*v* = 22	11.6	moon
May 3	8065.3	12	W	45 2 *v*	13.5	near limit

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 7	8710.4	12	F	19 4 v; v 2 22	11.6	
Mar. 3	8734.4	12	F	10 6 v; v 4 17	10.4	
" 26	8757.4	12	F	7 4 v; v 4 9	9.2	
Apr. 13	8775.4	12	F	4 4 v; v 3 6	8.6	
" 22	8784.4	12	F	$v = 4$	8.3	
May 7	8799.4	12	F	4 6 v; v 2 6	8.7	
" 18	8810.4	12	F	v 4 6; $v = 4$	8.3	
1911						
Apr. 18	9145.4	5	S	$v = 12$; 10 3 v	10.0	
" 26	9153.4	5	S	$v = 16$; 10 7 v	10.5	

U GEMINORUM 074922 II

1855.0; α $7^h 46^m 30^s$; δ $+22° 22'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 238. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Apr. 2	8034.4	5	W	v not seen; 25 seen	<12.4	hazy
" 13	8045.4	12	W	v not seen; 39 just caught	<13.7	moon
1911						
Apr. 11	9138.4	12	F	v not seen; 35 seen with difficulty	<13.4	
" 25	9152.4	12	F	39 2 v	13.9	v uncertain
May 14	9171.4	12	F	v not seen; 23, 24, 25, seen	<12.4	
" 25	9182.4	12	F	v not seen; 33 and 39 seen	<13.7	low

R CANCRI 081112 II

1855.0; α $8^h 8^m 34^s$; δ $+12° 10'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Feb. 6	8344.4	5	W	*v* not seen; 28 seen	<10.7	moon
Mar. 18	8384.4	5	W	*v* = 33	11.2	
“ 26	8392.4	5	W	*v* 2.5 33	11.0	
Apr. 16	8413.4	5	W	28 5 *v*; *v* 6 33	10.9	
“ 24	8421.4	5	W	28 3 *v*; *v* 6 33	10.8	
May 12	8439.4	5	W	*v* 3 19; 10 4 *v*	9.8	
“ 18	8445.4	12	W	*v* 2 19	9.8	
“ 29	8456.4	12	F	*v* 2 19; 10 2 *v*	9.8	

V CANCRI 081617 II

1855.0; α $8^{h}\,13^{m}\,27^{s}$; δ $+17^{\circ}\,44'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Mar. 10	8011.4	12	W	*v* 1 24; *v* 5 25	11.0	
“ 27	8028.4	5	W	*v*, just caught, = 26	11.5	hazy
Apr. 6	8038.4	12	W	*v* 4 43; *v* = 38	12.4	
“ 17	8049.4	12	W	*v* = 41	12.6	
May 10	8072.4	12	W	*v* not seen; 34 seen	<12.2	moon, hazy
“ 18	8080.4	12	W	*v* = 46; *v* 2 46	12.7	
1909						
Mar. 20	8386.4	5	W	*v* 4 24; *v* 1 21	10.7	
Apr. 16	8413.4	5	W	*v* 4 8; 4 5 *v*	8.6	
“ 22	8419.4	5	W	4 5 *v*; *v* 8 8	8.4	
May 8	8435.4	5	W	4 3 *v*; *v* 4 7	8.4	
“ 29	8456.4	12	F	2 2 *v*; *v* 1 3	7.8	moon
June 11	8469.4	12	F	*v* = 3	8.0	low
1912						
Apr. 16	9509.4	5	S	7 1 *v*; *v* 2 10	9.0	
“ 25	9518.4	5	S	4 2 *v*; *v* 5 8	8.4	moon
May 2	9525.4	5	S	3 4 *v*; *v* 1 5	8.3	
“ 11	9534.4	5	S	3 2 *v*; *v* 2 4	8.1	

X LYNCIS 081935

1855.0; α $8^{h}\,16^{m}\,11^{s}$; δ $+35^{\circ}\,52'.8$.

Comparison stars; as the variable was always faint while under observation, only faint stars were used for comparison. Their magnitudes were obtained by estimation.

Des.	Mag.	α 1900	δ 1900
l	12.5	$8^h\ 19^m\ 35^s$	+35° 47′.4
m	12.9	19 47	44.7
n	13.0	19 48	46.5
o	13.5	18 52	45.1

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Apr. 15	9142.4	12	F	l 4 *v*; m 2 *v*	13.0	
" 24	9151.4	12	F	l 4 *v*; *v* 4 o	13.0	
May 14	9171.4	12	F	*v* not seen; l seen	<12.5	
" 21	9178.4	12	F	*v* not seen; n seen	<13.0	
" 25	9182.4	12	F	*v* glimpsed; o seen	<13.5	o faint
1912						
May 2	9525.4	12	F	*v* not seen; n seen faintly	<13.0	moon
" 10	9533.4	12	F	*v* not seen; o seen	<13.5	
June 5	9559.4	12	F	*v* not seen; o seen dimly	<13.5	
" 12	9566.4	12	F	*v* not seen; n faintest seen	<13.0	low

U CANCRI 083019 II

1855.0; α $8^h\ 27^m\ 28^s$; δ +19° 23′.5.

Comparison stars; Hagen numbers used. The magnitudes were taken from a curve based on Hagen grades and Harvard magnitudes, *Annals,* vol. 57, p. 239; the co-ordinates of which will be found in Table III. Four additional very faint stars were used which extend in a line nearly directly south of the variable, and which may be seen on Wolf-Palisa chart no. 38. They were also located on a Hagen chart and their positions read from it. The magnitudes were obtained by direct estimation. Star t is so nearly in the position of *v* that there was evidently confusion in identifying the variable when it was very faint. Therefore when only one star of the 14th magnitude was seen in this position, it was assumed to be t, and this would indicate that the variable was then fainter than 14.0. t first detected in 1911, Jan. 28.

Des.	Mag.	α 1900	δ 1900
y	13.7	$8^h\ 30^m\ 2^s$	+19° 8′.4
z	13.9	30 5	11.9
t	14.0	30 5	13.9
q	14.2	30 1	10.2

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Mar. 1	7271.4	12	W	v not seen; 36 seen	<12.5	moon, hazy
" 19	7289.4	12	W	v on limit, est. 13.5 ±	13.5 ±	
1909						
Feb. 17	8355.4	4	W	v = 12; 6 5 v	9.8	
Mar. 11	8377.4	5	W	v = 12	9.8	
Apr. 11	8408.4	5	W	28 3 v; v 2 30	11.3	
May 8	8435.4	5	W	v on limit; est. 12.0 ±	12.0 ±	
" 29	8456.4	12	F	v not seen; 35 faintest seen	<11.9	moon
June 11	8469.4	12	F	v not seen; 38 faintest seen	<12.8	l., twilight
1911						
Jan. 28	9065.4	12	F	v = z; v = t; v est. 14.0	14.0	on limit
Feb. 16	9084.3	12	F	v not seen; t on limit	<14.0	
" 28	9096.4	12	F	one star seen in place t, v, = z	<14.0	
Apr. 15	9142.4	12	F	v not seen; t glimpsed	<14.0	
" 25	9152.4	12	F	v or t on limit; z seen	<14.0	
May 14	9171.4	12	F	v not seen; 33 seen	<11.7	
" 21	9178.4	12	F	v not seen; 38 seen	<12.8	difficult
" 25	9182.4	12	F	v not seen; z glimpsed	<13.9	clear
1912						
Feb. 13	9446.4	12	F	v or t seen, est. 14.0; z seen	<14.0	
Mar. 7	9469.4	12	F	v or t seen, est. 14.1; q seen	<14.2	very clear
Apr. 10	9503.4	12	F	star in place v est. 14.0; q seen	<14.2	
" 19	9512.4	12	F	v not seen; t seen	<14.0	
May 4	9527.4	12	F	v not seen; est. .5<40	13.7	
" 17	9540.4	12	F	39 1 v; v 2 40	13.0	quite hazy
June 5	9559.4	12	F	18 1 v; v 1 22	10.5	

Note.—On the Wolf-Palisa chart the variable is about equal to q, and therefore has magnitude 14.2 on J. D. 2415403.3, E. Stand. time.

T CANCRI 085120 IV

1855.0; α $8^h\,48^m\,23^s$; δ $+20°\,24'.1$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Jan. 29	7240.4	12	W	v 5 18; v = 3	8.8	
Mar. 5	7275.4	12	W	v = 3; v 2 3	8.2	
1909						
Feb. 6	8344.4	5	W	v 12 18; 3 1 v	8.4	
Mar. 11	8377.4	5	W	v 4 18; v = 11	9.3	
" 20	8386.4	5	W	v 5 18; 3 7 v	9.1	
Apr. 4	8401.4	5	W	3 4 v; v 8 18	8.8	
" 22	8419.4	5	W	v = 11	9.3	
May 12	8439.4	5	W	11 3 v; v 2 17	9.6	
" 29	8456.4	12	F	8 2 v; v 3 10	9.0	
June 11	8469.4	12	F	8 4 v; v 2 10	9.2	

W CANCRI 090425 VI

1855.0; α $9^h\ 1^m\ 24^s$; δ $+25^\circ\ 50'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Feb. 6	8344.4	5	W	v possibly caught, 11.0±	11.0±	moon
Mar. 18	8384.4	5	W	17 2 v	11.5	
Apr. 16	8413.4	5	W	v 2 24	12.4	24 just seen
" 24	8421.4	12	F	v 1 23; v = 22	12.2	
May 8	8435.4	12	F	v 2 27; 24 1 v	12.8	
" 23	8450.4	12	F	27 1 v; v 2.5 30	13.3	
June 11	8469.4	12	F	24 5 v; v 1 30	13.3	
1910						
Feb. 7	8710.4	12	F	v 2 5; 3 3.5 v	8.6	
Mar. 3	8734.4	5	S	9 2 v; v 6 12	10.0	
" 8	8739.4	5	S	9 4 v; v 4 12	10.2	
" 17	8748.4	5	S	9 3 v; v 5 12	10.1	
Apr. 1	8763.4	12	F	v 2 12; v 6 15	10.4	
1911						
Apr. 15	9142.4	12	F	v 4 12; 10 4 v	10.3	
" 25	9152.4	12	F	v 2 12; v 4 17	10.6	
May 13	9170.4	12	F	v between 12 and 18	11.2	poor, moon
" 14	9171.4	12	F	12 3 v; v 3 17	11.0	
" 25	9182.4	12	F	v = 17	11.3	
1912						
Feb. 13	9446.4	12	F	12 2 v; v 7 17	10.7	

W URSAE MAJORIS 093656 IV

1855.0; α $9^h\ 33^m\ 32^s$; δ $+56^\circ\ 36'.7$.

Comparison stars; a *Durchmusterung* map was used, to which letters were assigned by the observer. The magnitudes of seven stars were taken from *Annals*, vol. 54, and these served as standards for the remaining three, the magnitudes of which were obtained by photometric comparisons. As all of the comparisons of the variable were made with the photometer and are in excellent accord, it was decided to carry the magnitudes to hundredths.

Des.	Mag.	B. D.	Authority
a	6.67	56° 1397	*Annals*, vol. 54
c	7.34	51 1536	*Annals*, vol. 54
h	7.40	54 1316	*Annals*, vol. 54
k	7.74	54 1319	*Annals*, vol. 54

Des.	Mag.	B. D.		Authority
o	8.01	55	1339	*Annals*, vol. 54
l	8.13	58	1192	*Annals*, vol. 54
n	8.30	53	1356	Photometric comparison
b	8.74	56	1399	Photometric comparison
m	8.79	59	1246	*Annals*, vol. 54
d	9.01	56	1398	Photometric comparison

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value
1903	241						
Apr. 27	6232	10^h	12^m	12	W	phot. comp. with a, b, c, d	8.34
" 27	6232	10	37	12	W	phot. comp. with a and c	7.82
" 27	6232	11	18	12	W	phot. comp. with a and c	7.39
" 27	6232	11	32	12	W	phot. comp. with a and c	7.18
" 28	6233	10	28	12	W	phot. comp. with a and c	8.42
" 28	6233	10	54	12	W	phot. comp. with a and c	8.13
" 28	6233	11	19	12	W	phot. comp. with a and c	7.78
" 28	6233	12	5	12	W	phot. comp. with a and c	8.34
" 29	6234	10	10	12	W	phot. comp. with h and k	8.69
" 29	6234	10	30	12	W	phot. comp. with h and k	8.16
" 29	6234	10	58	12	W	phot. comp. with h, k, b, d	7.87
" 29	6234	11	12	12	W	phot. comp. with h, k, b, d	8.31
" 29	6234	11	38	12	W	phot. comp. with h and k	7.73
" 29	6234	11	46	12	W	phot. comp. with h and k	7.70
May 1	6236	9	30	12	W	phot. comp. with h and k	7.80
" 1	6236	9	48	12	W	phot. comp. with h and k	7.59
" 1	6236	10	14	12	W	phot. comp. with h and k	7.96
" 1	6236	10	50	12	W	phot. comp. with h, k, n	7.79
" 1	6236	11	42	12	W	phot. comp. with h, k, n	7.69
" 1	6236	11	53	12	W	phot. comp. with h, k, n	7.89
" 1	6236	1	11	12	W	phot. comp. with h and k	8.32
" 1	6236	1	30	12	W	phot. comp. with h and k	8.35
" 1	6236	1	34	12	W	phot. comp. with h and k	8.55
" 15	6250	8	55	12	W	phot. comp. with h and k	7.83
" 15	6250	9	10	12	W	phot. comp. with h and k	7.34
" 15	6250	9	24	12	W	phot. comp. with h and k	7.96
" 15	6250	9	47	12	W	phot. comp. with h and k	8.18
" 15	6250	10	4	12	W	phot. comp. with h and k	8.56
" 15	6250	10	30	12	W	phot. comp. with h and k	8.94
" 15	6250	10	48	12	W	phot. comp. with h and k	8.62
" 16	6251	9	50	12	W	phot. comp. with h and k	7.88
" 16	6251	10	3	12	W	phot. comp. with o and m	8.12
" 16	6251	10	22	12	W	phot. comp. with o and m	8.45
" 16	6251	10	52	12	W	phot. comp. with o and m	8.26
" 16	6251	11	35	12	W	phot. comp. with m	7.74
" 16	6251	11	41	12	W	phot. comp. with m	7.72
" 19	6254	10	4	12	W	phot. comp. with h, k, l	7.93
" 19	6254	10	17	12	W	phot. comp. with h, k, l	8.32
" 19	6254	11	14	12	W	phot. comp. with h, k, l	8.59
" 21	6256	9	10	12	W	phot. comp. with l and o	7.60
" 21	6256	9	38	12	W	phot. comp. with l and o	8.25
" 21	6256	9	52	12	W	phot. comp. with l and o	8.72
" 22	6257	9	34	12	W	phot. comp. with o and l	8.00
" 23	6258	9	5	12	W	phot. comp. with h and k	7.51
" 23	6258	9	19	12	W	phot. comp. with h, k, l, o	7.71
" 23	6258	9	45	12	W	phot. comp. with h, k, l, o	7.89

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value
1903	241						
May 25	6260	9	13	12	W	phot. comp. with k, l, m, o	7.52
" 25	6260	9	42	12	W	phot. comp. with k, l, m	8.19
" 25	6260	9	56	12	W	phot. comp. with k, l, m	7.84
June 1	6267	8	55	12	W	phot. comp. with h and k	7.43
" 1	6267	9	16	12	W	phot. comp. with h and k	7.62
" 1	6267	9	42	12	W	phot. comp. with k and m	8.11
" 1	6267	9	55	12	W	phot. comp. with k and m	8.08
" 2	6268	10	30	12	W	phot. comp. with l, m, o	8.06
" 2	6268	10	47	12	W	phot. comp. with k, l, m, o	8.44
" 2	6268	11	5	12	W	phot. comp. with k, l, m, o	8.46
" 27	6293	9	46	12	W	phot. comp. with h, k, m	7.33
" 27	6293	10	1	12	W	phot. comp. with h, k, m	7.77
" 27	6293	10	13	12	W	phot. comp. with h, k, m	7.57
" 27	6293	10	40	12	W	phot. comp. with k	8.10
" 27	6293	10	46	12	W	phot. comp. with k	8.13
July 1	6297	9	19	12	W	phot. comp. with h, k, m	7.94
" 1	6297	9	32	12	W	phot. comp. with h, k, m	7.80
" 1	6297	9	42	12	W	phot. comp. with k and m	7.72
" 1	6297	10	20	12	W	phot. comp. with k and m	8.10
" 4	6300	10	13	12	W	phot. comp. with a, h, k	7.85
" 4	6300	10	24	12	W	phot. comp. with a, h, k	7.80
" 4	6300	10	53	12	W	phot. comp. with h and k	8.08
" 4	6300	11	1	12	W	phot. comp. with h and k	8.00
" 4	6300	11	11	12	W	phot. comp. with h and k	7.98
" 6	6302	9	11	12	W	phot. comp. with h and k	7.89
" 6	6302	9	28	12	W	phot. comp. with h and k	7.99
" 6	6302	9	54	12	W	phot. comp. with h and k	7.86
" 6	6302	10	8	12	W	phot. comp. with k and m	7.86
" 6	6302	10	23	12	W	phot. comp. with k and m	7.98
" 6	6302	10	37	12	W	phot. comp. with k and m	8.10
" 10	6306	9	12	12	W	phot. comp. with h and k	7.86

R LEONIS MINORIS 093934 III

1855.0; α $9^h 36^m 52^s$; δ $+35° 10'.6$.

Comparison stars; Hagen numbers used, magnitudes obtained from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Mar. 22	8388.4	5	W	v 8 22; 11 8 v	10.2	
Apr. 16	8413.4	5	W	v barely seen, est. 11.0+	11.0+	hazy
May 8	8435.4	12	F	v 2.5 26; 24 3 v	11.8	
" 23	8450.4	12	F	25 2 v; v 1 26	12.0	
June 11	8469.4	12	F	v = 29	12.6	
" 19	8477.4	12	F	v 3 35; 29 1.5 v	12.7	l., not cl.

R LEONIS 094211 IV

1855.0; α $9^h\ 39^m\ 45^s$; δ $+12°\ 5.'9$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Apr. 25	6961.3	5	W	2 2 v; v 5 6	6.9	
May 20	6986.4	12	W	v 4 2; 1 2 v	6.1	
June 3	7000.4	3	W	$v = 1$	5.8	finder used
1906						
Apr. 25	7326.4	5	W	v 2 2; 1 4 v	6.3	
1909						
May 8	8435.4	5	W	$v = 21$	9.8	
" 23	8450.4	5	W	16 5 v; v 2 21	9.6	
1912						
Jan. 24	9426.4	5	S	16 1 v; v 4 21	9.4	
Feb. 6	9439.4	5	S	v 2 16; $13 = v$	9.0	
" 20	9453.4	5	S	6 4 v; v 4 16	8.5	
Mar. 13	9475.4	5	S	$v = 5$; v 3 6	7.6	
Apr. 10	9503.4	5	S	1 4 v; v 1 2	6.4	
" 20	9513.4	5	S	1 1 v; v 4 2	6.0	
May 2	9525.4	5	S	$1 = v$; v 5 2	5.8	
" 11	9534.4	5	S	v 1 1; v 5 2	5.8	
June 3	9557.4	5	S	1 1 v; v 4 2	6.0	
" 13	9567.4	5	S	$v = 2$	6.6	low

Z LEONIS 094627

1855.0; α $9^h\ 43^m\ 48^s$; δ $+27°\ 35'.0$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes are taken from Luizet, *A. N.*, 4532.

l: 27° 1819, 8.1 mg.;
g: 1814, 8.7 mg.;
n: 1821, 8.9 mg. estimated.

The observations agree closely with the elements given in *A. N.*, 4532.

Date	J.D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Mar. 20	8386.4	5	W	l 5 v; v = n	8.8	
" 22	8388.4	5	W	l 5 v; v = n	8.8	
" 26	8392.4	5	W	l 6 v; v 2 n	8.7	
Apr. 4	8401.4	5	W	l 4 v; v 2 n	8.6	
May 12	8439.4	5	W	l 8 v; n 1 v; v = g	8.9	
" 29	8456.4	5	W	l 5 v; v 2 g	8.6	

V LEONIS 095421 II

1855.0; α $9^h\,51^m\,57^s$; δ $+21^\circ\,57'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 241. Star no. 1, B. D. 22° 2148, for which no Hagen grade is given, has magnitude 6.61, *Annals*, vol. 54. The co-ordinates of the magnitude curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
May 12	7343.4	5	W	*v* not seen; 12 seen	<10.6	hazy
" 14	7345.4	12	W	21 3 *v*; *v* = 30	13.2	
1910						
Feb. 7	8710.4	12	F	17 5 *v*; *v* 1.5 19	12.5	
Mar. 3	8734.4	12	F	21 2 *v*; 19 4 *v*	13.0	
Apr. 1	8763.4	12	F	*v* = 33	13.4	
" 13	8775.4	12	F	*v* = 33	13.4	
" 30	8792.4	12	F	33 1.5 *v*	13.6	
May 7	8799.4	12	F	33 2 + *v*	<13.6	faint
" 18	8810.4	12	F	*v* not seen; 21 seen	<12.8	
1911						
Apr. 15	9142.4	12	F	17 2 *v*; *v* 4 19	12.2	
" 25	9152.4	12	F	*v* 2 12; 8 8 *v*	10.6	
May 18	9175.4	5	S	*v* 4 6; *v* = 5	9.2	
1912						
Feb. 14	9447.4	5	S	*v* = 7; *v* 4 12	10.0	
Mar. 7	9469.4	5	S	5 2 *v*; *v* 2 7	9.4	
Apr. 10	9503.4	5	S	12 5 *v*; *v* 3 17	11.4	
" 20	9513.4	5	S	*v* 1 19	12.5	just caught
May 3	9526.4	5	S	*v* not seen; 21 seen	<12.8	
June 5	9559.4	12	F	16 4 *v*; *v* 3 19	12.4	

R URSAE MAJORIS 103769 III

1855.0; α $10^h\,34^m\,19^s$; δ $+69^\circ\,32'.1$.

Comparison stars; Hagen numbers used, magnitudes obtained from *Annals*, vol. 37, p. 198. Star no. 2, B. D. 69° 583, for which no Hagen grade is given, has magnitude 5.9, *Annals*, vol. 50.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
May 5	5875.5	5	W	*v* barely seen; 18 seen	<11.9	18 faint
1905						
Apr. 22	6958.4	5	W	2 10 *v*; *v* 9 3	6.7	
May 8	6974.4	3	W	*v* 6 3; 2 11 *v*	6.9	finder used
" 8	6974.4	5	W	*v* 8 3	6.6	
" 20	6986.4	3	W	*v* 3 3; 2 10 *v*	7.1	finder used
June 8	7005.4	5	W	*v* 5 5 ; 4 1 *v*	8.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Jan. 24	7235.4	12	W	7 3 v; v 5 12	10.1	
Aug. 22	7445.5	3	W	v not seen; 14 glimpsed	<11.4	
Oct. 16	7500.4	5	W	v probably not seen; 13 seen	<11.2	low
Dec. 3	7548.4	5	W	v 4 5; v = 4	8.0	
" 11	7556.4	5	W	v 5 5; 3 4 v	7.9	
1907						
Jan. 28	7604.4	12	W	v 5 5; v = 3	7.7	
Apr. 2	7668.4	12	W	v 3 13; 10 6 v	10.9	
" 15	7681.4	5	W	v = 13	11.2	misty
July 12	7769.4	3	W	v not seen; 14 seen	<11.4	
" 29	7786.4	3	W	v not seen; 14 seen	<11.4	
Aug. 11	7799.4	3	W	v not seen; 14 seen	<11.4	good seeing
" 26	7814.4	3	W	v not seen; 14 not seen	<11.4	good, l.
Oct. 15	7864.4	5	W	v 5 5	8.0	moon
1908						
Mar. 4	8005.4	5	T, W	18 2 v; v 1 23	12.3	
1912						
Feb. 12	9445.4	12	F	7 3 v; v 2 12	10.2	
Mar. 13	9475.4	5	S	10 4 v; v 2 14	11.0	
Apr. 10	9503.4	5	S	18 3 v	12.2	just caught

W LEONIS 104814 II

1855.0; α $10^{h}\ 45^{m}\ 58^{s}$; δ $+14° 29'.2$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 241. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 22	8419.4	5	W	v not seen; est. 12.5 or less	<12.5	
" 24	8421.4	12	F	v = 30; v 1 32	13.2	
May 8	8435.4	12	F	18 4 v; v 2 20	11.9	
" 23	8450.4	12	F	v 2 12; 8 1.5 v	10.5	
" 29	8456.4	5	W	v 4 6; 3 4 v	9.6	moon, misty
June 11	8469.4	5	W	v 5 6; 3 2 v	9.4	
" 19	8477.4	12	F	v = 4	9.5	misty
1910						
Feb. 7	8710.4	12	F	v not seen; 32 seen	<13.3	poor images
Mar. 3	8734.4	12	F	v on limit, est. 14 ±; 32 seen easily	13.8	fine seeing
Apr. 13	8775.4	12	F	32 2 v	13.5	
" 30	8792.4	12	F	32 4 v	13.7	
May 7	8799.4	12	F	32 2 + v	<13.5	on limit

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Apr. 15	9142.4	12	F	*v* not seen; 32 seen	<13.3	
" 25	9152.4	12	F	*v* est. 13.8+; 32 10 *v*	14.0	very faint
May 21	9178.4	12	F	*v* = 32	13.3	
" 25	9182.4	12	F	29 2 *v*; 32 1 *v*	13.4	
1912						
Feb. 13	9446.4	12	F	*v* not seen; 32 seen easily	<13.3	
Mar. 7	9469.4	12	F	*v* not seen; 32 seen	<13.3	
Apr. 11	9504.4	12	F	*v* glimpsed, at least 5 < 13.3	<13.8	very faint
May 4	9527.4	12	F	32 5 *v*; *v* est. 13.8	13.8	
" 17	9540.4	12	F	*v* about = 32	13.3 ±	faint
June 5	9559.4	12	F	29 2 *v*; *v* = 32	13.3	

S LEONIS 110506 II

1855.0: α $11^h\ 3^m\ 21^s$; δ $+6°\ 14'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 242. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Apr. 11	9504.4	5	S	11 2 *v*; *v* 2 13	10.8	
" 20	9513.4	5	S	10 2 *v*; *v* 4 13	10.6	
May 11	9534.4	5	S	9 3 *v*; *v* 3 14	10.8	
" 31	9554.4	5	S	*v* = 16	11.8	
June 3	9557.4	5	S	19 1 *v*	12.6	on limit

RU URSAE MAJORIS 113639

1855.0; α $11^h\ 34^m\ 1^s$; δ $+39°\ 17'.2$.

Comparison stars; a *Durchmusterung* map was used, to which were added several other stars. The positions for 1900 are given in the table below. The magnitudes were obtained by estimation, in grades, the comparisons being based on stars B. D. 39° 2466, mg. 8.2, *Annals*, vol. 54, and B. D. 39° 2464, mg. 10.0, *Annals*, v. 70.

Des.	Mg.	α 1900			δ 1900		Remarks
g	8.2	11^h	39^m	5^s	+39°	5′.0	B. D. 39° 2466
A	8.5		33	1	39	18.5	2458
B	8.8		33	26	39	12.2	2459

Des.	Mg.	α 1900			δ 1900		Remarks
d	10.0	11^h	37^m	39^s	39°	41′.4	B. D. 39° 2464
a	10.1		35	18	38	55.7	2463
b	10.4		35	6	39	1.0	2461
2	10.4		36	41	39	16.8	
c	10.5		35	16	39	18.0	2462
3	11.0		36	49	39	19.7	
1	11.1		37	32	39	10.2	
y	12.5		35	44	39	0.7	
w	12.8		36	6	38	56.7	
u	12.9		36	13	38	53.6	
z	12.9		35	55	39	6.4	
t	13.0		36	48	38	54.5	
α*	13.4		36	16	38	58.5	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Jan. 27	7968.4	12	W	*v* 2 y	12.3	
Feb. 7	7979.4	12	W	*v* not seen; y seen; z barely seen	<12.9	too hazy
Mar. 7	8008.4	12	W	*v* not seen, est. <12.5; y seen	<12.5	
" 21	8022.4	5	W	*v* not seen; y, w, z seen	<12.9	
Apr. 6	8038.4	5	W	*v* not seen; y seen; z caught	<12.9	
" 9	8041.4	12	W	*v* not seen; t faintest seen	<13.0	
" 23	8055.4	5	W	*v* not seen; y, w, z, seen	<12.9	
May 18	8080.4	12	W	*v* not seen; t faintest seen	<13.0	
" 23	8085.4	5	W	*v* not seen; b faintest seen	<10.4	too hazy
" 25	8087.4	12	W	*v* not seen; y faintest seen	<12.5	
1909						
Jan. 22	8329.4	5	W	*v* not seen; y faintest seen	<12.5	
Feb. 12	8350.4	12	F	*v* not seen; t faintest seen	<13.0	not clear
" 17	8355.4	12	F	*v* on limit, > α	>13.4	
Mar. 20	8386.4	12	F	a 8 *v*; *v* 11 y; c 6 *v*	11.1	
Apr. 16	8413.4	12	F	B 6 *v*; *v* 8 a	9.4	
" 22	8419.4	5	W	*v* = B	8.8	
May 8	8435.4	5	W	B 3 *v*; *v* 8 a	9.2	
" 23	8450.4	5	W	B 6 *v*; *v* 5 a	9.5	
June 11	8469.4	5	W	*v* = b	10.4	
" 19	8477.4	5	W	b 3 *v*	10.7	
July 1	8489.4	5	W	*v* barely seen, est. < b	<10.4	bright moon
1910						
Jan. 10	8682.5	12	F	*v* = B	8.8	
" 15	8687.4	12	F	*v* = B	8.8	
Feb. 1	8704.4	5	W	B 10 *v*; *v* 5 a	9.7	
" 7	8710.4	5	W	*v* 3 a	9.8	
Mar. 3	8734.4	5	W	a 5 *v*; *v* 2 1	10.8	
" 23	8754.4	12	F	*v* not seen; b faintest seen	<10.4	moon
" 26	8757.4	12	F	*v* 6 y; b 2 mg. *v*	12.2	ft. in moon
Apr. 30	8792.4	12	F	*v* 2 α	13.2	
1911						
Jan. 28	9065.4	12	F	*v* not seen; t faintest seen	<13.0	
Feb. 16	9084.4	12	F	*v* not seen; z faintest seen	<12.9	

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* This is the brightest star of a triple; impossible to measure them separately on account of magnitude.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Feb. 28	9096.4	12	F	v not surely seen, $< \alpha$	<13.4	
Apr. 15	9142.4	12	F	v 3 b; v 1 a	10.0	
" 25	9152.4	12	F	v 3 a; B 6 v	9.6	
May 21	9178.4	12	F	v = A	8.5	
" 25	9182.4	12	F	B 2 v; v 6 a	9.2	
1912						
Jan. 20	9422.4	12	F	B 4 v; v 8 a	9.2	
Feb. 6	9439.4	12	F	B 4 v; v 4 a	9.4	
" 13	9446.4	12	F	B 6 v; v 6 a	9.4	
" 28	9461.4	12	F	v 2.5 a	9.8	poor, moon
Mar. 7	9469.4	12	F	v = b	10.4	
" 13	9475.3	12	F	b 4 v; v 2 3	10.8	
" 22	9484.4	12	F	3 5 v; 3 6 v	11.6	
Apr. 11	9504.4	12	F	v 2 y; v 3 u	12.4	
May 10	9533.5	12	F	v 2 α; v est. 13.3	13.2	
June 5	9559.5	12	F	α 5 v; v est. 13.8	13.8	very clear
" 7	9561.4	12	F	α 5 v; v almost invisible	13.9	

Z DRACONIS 113972

1855.0; α $11^h\,37^m\,13^s$; δ $+73°\,3'.2$.

Comparison stars; a *Durchmusterung* map was used, with additional faint stars. The Harvard stars chosen for standards of magnitude were B. D. 73° 532, 7.24 mg., 74° 475, 7.64 mg., 74° 476, 6.78 mg., and 72° 550, 7.54 mg., *Annals*, vol. 54. The positions and magnitudes of the comparison stars are given below. The position of z was obtained by micrometric comparison with e. It differs from that obtained by bringing the *Durchmusterung* position up to 1900 by precession by 1'.3 in declination.

It will be seen that many of the comparisons were made with the photometer. Because of their excellent agreement it was decided to keep two decimal places in the magnitudes both of the comparison stars and of the variable. For visual observations only tenths of magnitudes were retained.

Des.	Mag.	α 1900			δ 1900		B. D.		A. G. *Berl n C.*
e	9.22	11^h	40^m	18^s	+72°	39'.0	72°	545	1599
f	9.56		37	35		40.6	72	543	
z	10.38		40	36		49.3	73	534	
x	11.45		39	40		45.1			
y	12.48		39	35		40.9			
o	12.77		39	57		38.3			
n	13.14		39	38		44.1			

Date		J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1903		241							
July	3	6299	9h	55m	12	W	phot. comp. with x	11.17	
"	"	6299	10	39	12	W	phot. comp. with x	10.87	
"	"	6299	10	49	12	W	phot. comp. with x	10.75	
"	"	6299	10	49	12	W	z 3 *v*	10.7	
"	"	6299	10	59	12	W	z 2 *v*	10.6	
"	4	6300.4	—	—	12	W	phot. comp. with z	10.58	
"	4	6300.4	—	—	12	W	z 3 *v*	10.7	
"	7	6303	9	20	12	W	x 2.5 *v*	11.70	moon
"	"	6303	9	26	12	W	phot. comp. with x	11.55	moon
"	"	6303	9	45	12	W	*v* 2 y	12.3	moon
"	"	6303	10	5	12	W	y 3 *v*, barely seen	12.8	moon
"	"	6303	10	47	12	W	*v* = y	12.5	
"	"	6303	10	55	12	W	*v* 1 y	12.4	
"	"	6303	10	58	12	W	*v* 3 y	12.2	
"	"	6303	11	4	12	W	*v* 5 y; x 5 *v*	12.0	
"	"	6303	11	12	12	W	x 2.5 *v*	11.7	
"	"	6303	11	16	12	W	x 1 *v*	11.6	
"	"	6303	11	26	12	W	x 0.5 *v*	11.5	
"	"	6303	11	30	12	W	*v* 2 x	11.2	
"	"	6303	11	58	12	W	*v* 6 x	10.8	
"	"	6303	12	4	12	W	phot. comp. with z	11.10	
"	"	6303	12	13	12	W	z 5 *v*	10.9	
"	8	6304.4	—	—	12	W	z 3.5 *v*	10.7	maximum
"	9	6305.4	—	—	12	W	phot. comp. with e, f, and z	10.65	maximum
"	15	6311	12	11	12	W	phot. comp. with z	10.64	moon
"	"	6311	12	38	12	W	phot. comp. with x and z	11.09	
"	"	6311	12	42	12	W	*v* 4 x	11.0	
"	"	6311	12	49	12	W	phot. comp. with x	11.22	
"	"	6311	12	52	12	W	x 1 *v*	11.6	
"	"	6311	13	24	12	W	*v* 3 y; x 6 *v*	12.1	
"	"	6311	13	44	12	W	y 4.5 *v*	12.9	difficult
"	"	6311	14	8	12	W	*v* = o	12.8	
"	"	6311	14	19	12	W	y 0.5 *v*	12.5	
"	"	6311	14	20	12	W	*v* = y	12.5	
"	"	6311	14	25	12	W	*v* 3 y	12.2	
"	26	6322	8	59	12	W	phot. comp. with z	11.07	
"	"	6322	9	42	12	W	*v* = x	11.4	
"	"	6322	9	51	12	W	x 3 *v*	11.8	
"	"	6322	9	57	12	W	*v* = y	12.5	
"	"	6322	10	18	12	W	y 3 *v*	12.8	hazy
"	"	6322	10	22	12	W	o 0.5 *v*	12.8	hazy
"	"	6322	10	24	12	W	o 2 *v*	13.0	
"	"	6322	10	25	12	W	*v* = n	13.1	
"	"	6322	10	36	12	W	*v* = n; o 3 *v*	13.1	
"	"	6322	10	50	12	W	*v* = y	12.5	
"	"	6322	11	1	12	W	*v* 3 y	12.2	
"	"	6322	11	27	12	W	*v* = x	11.4	clouds

R COMAE 115919 II

1855.0; α $11^h\,56^m\,49^s$; δ $+19°\,35'.4$.

Comparison stars; a Hagen map was used as a basis and to it were added several faint stars, one by observation and three others from a map of Parkhurst, *Researches in Stellar Photometry*, plate 5. Parkhurst gives the magnitudes of his comparison stars on the Harvard scale. As these are somewhat different from corresponding Hagen values, especially for the faint stars, they were used with the Hagen grades to plot a curve from which the final magnitudes were obtained. The magnitude of the additional faint star inserted here was found by comparison and estimation. The three Parkhurst stars appeared to be fainter than as given in his table. This was attributed to the fact that they are very near a bright star, 7.7 mg., and hence would appear fainter in the 12 in. telescope than in the 40 in. The magnitudes adopted are a combination of the two. The co-ordinates of the magnitude curve will be found in Table III. The data for the four additional stars are given below.

Des.	Adopted mag.	Parkhurst mag.	α 1900			δ 1900	
z	13.3	12.8	11^h	58^m	42^s	+19°	22′
ε	13.5	13.2		58	59		25
30	13.8			59	10		26
β	14.1	14.1		58	50		24

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
June 3	7000.4	5	W	*v*, barely seen, = 11	11.2	low, hazy
1906						
Apr. 25	7326.4	5	W	*v* not seen; 15 faintest seen	<11.9	
May 14	7345.4	12	W	*v* not seen; 20 faintest seen	<12.7	
" 21	7352.4	5	W	*v* not seen; 17 faintest seen	<12.2	
June 12	7374.4	5	W	9 2 *v*; *v* 2 11	11.0	
" 24	7386.4	5	W	5 3 *v*; 6 1 *v*	9.9	
July 14	7406.4	3	W	*v* 4 5; 3 5 *v*	9.2	
1908						
Apr. 23	8055.4	5	W	*v* glimpsed, est. 12.0; 15 not seen	12.0 ±	hazy
1909						
Mar. 22	8388.4	12	F	30 4 *v*; *v* est. 14.2	14.2	on limit
Apr. 9	8406.4	12	F	*v* = 30	13.8	on limit
" 16	8413.4	12	F	*v* = 30	13.8	
" 23	8420.4	12	F	*v* 2 30	13.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
May 8	8435.4	12	F	20 2 *v*	12.9	
" 12	8439.4	12	F	*v* = 20; 20 2 *v*	12.8	
" 18	8445.4	12	F	14 2 *v*; *v* 2 17	12.0	
" 23	8450.4	12	F	9 2.5 *v*; *v* 2 11	11.0	
June 11	8469.4	5	W	4 1 *v*	9.1	
" 24	8482.4	5	W	3 2 *v*; *v* 1 4	8.8	
1910						
Mar. 3	8734.4	12	F	*v* = β; *v* est. 14.1 ?	14.1	on limit
Apr. 13	8775.4	12	F	*v* = ϵ; ϵ 2 *v*	13.6	
" 30	8792.4	12	F	*v* 5 z; 20 6 *v*	13.0	
May 7	8799.4	12	F	*v* 2 z	13.1	
1911						
Jan. 28	9065.4	12	F	*v* not seen; 20 faintest seen	<12.7	low, diff.
Feb. 16	9084.4	12	F	*v* not seen; 20 faintest seen	<12.7	moon
" 28	9096.4	12	F	*v* = ϵ; ϵ 2 *v*	13.6	
Apr. 15	9142.4	12	F	*v* about = 20	12.7 ±	ft. in moon
" 25	9152.4	12	F	*v* = 16	12.0	
May 21	9178.4	12	F	3 4 *v*; *v* 4 5	9.1	
" 25	9182.4	12	F	*v* 2 5; 2 7 *v*	9.2	
1912						
Feb. 6	9439.4	12	F	*v* not seen; 20 seen plainly	<12.7	low, poor
" 13	9446.4	12	F	*v* not seen; 30 faintest seen	<13.8	
Mar. 7	9469.4	12	F	*v* not seen; 30 faintest seen	<13.8	
" 13	9475.3	12	F	*v* not seen; z faintest seen	<13.3	misty
Apr. 10	9503.4	12	F	*v* 2 ϵ; z 2 *v*; *v* est. 13.5	13.4	fine seeing
May 4	9527.4	12	F	*v* = 20	12.7	very faint
" 10	9533.5	12	F	*v* = 16	12.0	
" 18	9541.4	12	F	*v* = 11	11.2	

RX VIRGINIS *115905* IV

1855.0; α $11^h\ 57^m\ 20^s$; δ $-4°\ 57'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs	Comparisons	Adopted value	Remarks
1902	241					
May 2	5872.4	5	W	*v* = 12	9.1	
" 14	5884.4	5	W	*v* 2 12; 5 7 *v* 3 12	8.8	
June 4	5905.4	5	W	*v* 2.5 12; 5 7 *v*	8.6	
" 28	5929.4	5	W	*v* 5 12; 5 7 *v*	8.4	poor
July 2	5933.4	5	W	*v* 4 12; 5 6 *v*	8.4	poor

RW VIRGINIS *120206* IV

1855.0; α $11^h\,59^m\,48^s$; δ $-5°\,57'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
May 2	5872.4	5	W	3 5 *v* 5 4	7.2	
" 14	5884.4	5	W	3 5 *v* 5 4	7.2	
June 4	5905.4	5	W	*v* 6 5; 3 4.5 *v*	7.1	
" 28	5929.4	5	W	*v* = 3	6.8	poor
July 2	5933.4	5	W	*v* 3 3	6.5	poor

T VIRGINIS *120905* I

1855.0; α $12^h\,7^m\,10^s$; δ $-5°\,13'.8$.

Comparison stars; Hagen numbers used, letters g, h, l, taken from *Annals*, vol. 37, p. 162. Magnitudes taken from *Annals*, vol. 37, pp. 162 and 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
May 7	5512.4	3	F	*v* = 5	9.8	
" 15	5520.4	3	F	*v* = l; 5 2 *v*	10.0	
" 21	5526.4	12	F	*v* 2 5	9.6	
" 23	5528.4	5	F	*v* 2 5; *v* = h	9.4	
1902						
Mar. 18	5827.4	5	W	8 2 *v*; *v* 4 14	10.4	
" 22	5831.5	12	W	*v* 2 14; 8 2 *v*	10.6	
" 26	5835.4	5	Sw	8 2 *v*; *v* 2 10	10.4	
Apr. 12	5852.4	12	W	*v* 0.5 14; 8 2 *v*	10.6	
" 24	5864.4	5	Sw	8 5 *v* 5 10	10.4	
" 30	5870.4	12	W	8 1 *v*; *v* 3 14	10.4	
May 1	5871.4	5	W	8 2 *v*; *v* 4 14	10.4	
" 5	5875.4	5	Sw	8 1 *v*; *v* 5 14	10.4	
" 5	5875.5	5	W	8 1 *v*; *v* 5 14	10.4	
" 14	5884.4	5	W	*v* = 10	10.5	
" 15	5885.4	5	Sw	*v* = 8	10.3	
" 29	5899.4	5	W	14 2 *v*; *v* 3 19	11.0	
" 30	5900.4	12	W	*v* 4 21; 14 3 *v*	11.2	
June 26	5927.4	12	W	*v* = 30	12.4	low
1903						
Mar. 19	6193.4	5	W	8 3 *v*; *v* 5 14	10.4	
" 26	6200.4	12	W	8 2 *v*; *v* 3 14	10.5	
Apr. 18	6223.4	12	W	*v* = 21	11.7	
May 2	6237.4	12	W	*v* 2 21	11.5	
" 22	6257.4	12	W	*v* 1 21	11.6	
" 30	6265.4	12	W	*v* = 30	12.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 8	6579.4	—	W	*v* = 8; 5 5 *v*	10.3	poor seeing
May 4	6605.4	—	W	*v* 2 21	11.5	

T CANUM VENATICORUM 122532 VI

1855.0; α 12h 23m 1s; δ +32° 18′.3.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, H. P. column.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Apr. 22	8054.4	5	W	*v* = 13	10.2	
1911						
Apr. 15	9142.4	12	F	20 3 *v*; *v* 7 23	12.5	
" 29	9156.4	12	F	20 2 *v*; *v* 2 21	12.3	
May 21	9178.4	12	F	21 1 *v*; 22 2.5 *v*	12.8	
1912						
Apr. 11	9504.4	12	F	13 4 *v*; *v* 3 16	10.7	
May 4	9527.4	12	F	13 2.5 *v*; *v* 4.5 16	10.6	
June 5	9559.4	12	F	*v* = 9	9.7	

Y VIRGINIS *122803* I

1855.0; α 12h 26m 25s; δ −3° 37′.3.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
May 15	5520.4	12	W	18 4 *v*; 20 = *v*	12.6	
" 23	5528.4	12	W	20 2.5 *v*; *v* = 21	13.1	
1902						
Mar. 14	5823.5	12	W	*v* = 18	12.0	
Apr. 12	5852.5	12	W	*v* 4 8; 4 4 *v*	10.0	
May 1	5871.4	5	W	1 4 *v*; *v* 5 4; *v* = 3	8.9	
" 14	5884.5	5	W	*v* 2 4; 3 1 *v*	9.2	
" 30	5900.4	12	W	*v* = 4	9.6	
June 26	5927.4	12	W	*v* = 11; *v* 5 18; *v* 2 12	11.0	
1903						
Mar. 19	6193.4	5	W	*v* not seen; 18 barely seen	<12.0	low, misty
" 26	6200.4	12	W	*v* not seen; 20 seen faintly	<12.8	
Apr. 18	6223.4	12	W	*v* not seen; 20 clearly seen	<12.8	
May 22	6257.4	12	W	*v* = 18	12.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 7	6578.4	12	W	12 4 *v*; *v* 5 18	11.4	hazy
May 4	6605.4	12	W	*v* = 20	12.8	faint
1905						
Apr. 25	6961.4	5	W	*v* = 4	9.6	
May 8	6974.4	5	W	*v* 4 4; 3 4 *v*	9.2	
1906						
Mar. 17	7287.4	12	W	*v* not seen; 20 seen	<12.8	low
Apr. 24	7325.4	5	W	*v* not seen; 18 just caught	<12.0	
May 14	7345.4	12	W	*v* 2 20; 18 5 *v*	12.6	
" 29	7360.4	5	W	12 2 *v*;	11.2	
June 27	7389.4	5	W	*v* 1 6; *v* 2 8	10.0	
1909						
Apr. 24	8421.4	12	F	20 2 *v*; *v* 2 21	13.0	
May 8	8435.4	12	F	15 2 *v*; *v* 1 17; *v* 2 18	11.8	
" 23	8450.5	12	F	12 1.5 *v*; *v* 3 13	11.0	
June 11	8469.4	12	F	*v* 3 8; 4 3 *v*	10.0	
" 19	8477.4	12	F	3 4 *v*; *v* 2 4	9.4	
1911						
Apr. 17	9145.4	5	S	1 4 *v*; *v* 8 4	8.7	
" 26	9153.4	5	S	1 8 *v*; *v* 2 4	9.2	
May 18	9175.4	5	S	4 4 *v*; *v* 2 8	10.0	

T URSAE MAJORIS 123160 III

1855.0; α $12^h 29^m 47^s$; δ $+60° 17'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Mar. 10	6915.4	12	W	*v* 8 2	7.2	
" 10	6915.4	12	W	phot. comp. with 2	7.4	
Apr. 15	6951.5	—	W	4 5 *v*; *v* 2 6	8.8	
1906						
Mar. 5	7275.4	12	W	*v* barely seen, <20	<12.1	moon
" 17	7287.4	12	W	24 5 *v* 5 26	12.8	
Apr. 24	7325.4	5	W	*v* barely seen, <20	<12.1	20 diff.
May 23	7354.4	5	W	*v* not surely seen; 20 caught	<12.1	hazy
June 27	7389.4	5	W	*v* 5 9; 6 5 *v*	9.4	
July 12	7404.4	3	W	*v* = 4; *v* 5 6	8.4	
Aug. 8	7431.4	3	W	4 2 *v*; *v* 4 6	8.5	
" 22	7445.4	3	W	*v* 2 4; 2 1 *v*	8.1	
Sept. 21	7475.4	3	W	*v* 4 6; 4 2 *v*	8.5	low
Oct. 16	7500.4	3	W	*v* = 9	9.8	
Dec. 18	7563.3	5	W	*v* not seen; 17 caught	<11.5	low
1907						
Mar. 6	7641.4	12	W	*v* 3 13; 9 3 *v*	10.2	
" 15	7650.4	5	W	4 3 *v*; *v* 8 9	8.8	clouds
Apr. 2	7668.4	12	W	*v* 4 6; *v* 1 2; *v* 3 4	8.1	
" 11	7677.4	5	W	*v* 1 2; *v* 7 4	7.8	
" 20	7686.4	12	W	*v* 2 4; 2 1 *v*	8.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Apr. 24	7690.4	5	W	*v* 3 2; *v* 8 4	7.6	
May 11	7707.4	5	W	*v* 2 4	8.1	
" 31	7727.4	5	W	*v* 2 6	8.7	
June 7	7734.4	5	W	6 1 *v*	9.0	
July 12	7769.4	3	W	5 3 *v*; *v* 3 7	9.0	
" 29	7786.4	3	W	*v* = 17	11.5	
Aug. 3	7791.4	3	W	*v* not seen, <11.0+	<11.0+	hazy
" 26	7814.4	3	W	*v* not seen, <11.0+; 17 not seen	<11.0+	l., good
Sept. 14	7833.4	3	W	*v* not seen; 13 barely seen	<10.5	hazy, moon
" 30	7849.4	3	W	*v* not seen, <11.0	<11.0	
1912						
Feb. 13	9446.4	12	F	7 3 *v*; *v* 4 9	9.4	
Mar. 13	9475.4	5	S	*v* 1 2; *v* 4 4	7.9	
Apr. 10	9503.4	5	S	*v* 2 2; *v* 5 4	7.8	
" 20	9513.4	5	S	2 1 *v*; *v* 1 4	8.2	
" 25	9518.4	5	S	2 3 *v*; *v* = 4	8.3	moon
May 2	9525.4	5	S	4 1 *v*; *v* 5 5	8.4	
" 11	9534.4	5	S	4 2 *v*; *v* = 5	8.6	
" 31	9554.4	5	S	13 1 *v*; *v* 1 14	10.6	

RV DRACONIS 123366

1855.0; α 12^h 31^m 12^s; δ +66° 23′.6.

Comparison stars; a *Durchmusterung* map with additional stars was used. The standard for magnitude was B. D. 66° 768, mg. 7.5, *Annals*, vol. 54. The magnitudes of the faint stars were determined by inter-comparison and direct estimation.

Des.	Mag.	α 1900			δ 1900		B. D.	
2	8.6	12^h	32^m	21^s	+65°	47′.0	66°	765
1	9.1		33	42	66	11.9		766
15	10.2		36	15	66	8.0		
m	11.7		31	53	66	2.6		
n	12.0		31	23	65	57.5		
o	12.2		32	15	65	54.5		
l	12.4		33	24	65	57.6		
p	12.4		32	53	66	0.8		
q	12.6		32	43	66	5.1		
k	12.9		33	14	66	9.8		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Mar. 3	8734.4	5	W	*v* 1 1	9.0	
Apr. 2	8764.4	12	F	1 3 *v*	9.4	*v* reddish
" 16	8778.4	12	F	15 2 *v*	10.4	ft. in moon
" 30	8792.4	12	F	m 2 *v*; *v* 2 n	11.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 5	8950.4	12	F	*v* = 1; 2 4 *v*	9.0	
" 28	8973.3	12	F	15 2 *v*; 1 7 *v*	10.1	
Nov. 19	8995.4	12	F	*v* 8 m; *v* est. 10.8	10.8	
Dec. 2	9008.4	12	F	*v* = m	11.7	
1911						
Jan. 24	9061.3	12	F	*v* not seen; q faintest seen	<12.6	
Feb. 23	9091.3	12	F	*v* est. 13.5+; k 4 *v*	13.4	*v* faint
Apr. 18	9145.4	12	F	*v* = 1	9.1	
" 26	9153.4	12	F	*v* = 1	9.1	
May 18	9175.4	12	F	1 2 *v*; *v* 6 15	9.4	
" 26	9183.4	12	F	1 2 *v*; *v* 4 15	9.6	
Oct. 13	9323.4	12	F	1 2 *v*; *v* 1 p; m 2 *v*	12.3	all faint
Nov. 16	9357.4	12	F	*v* = 1; 2 5 *v*	9.1	
1912						
Feb. 12	9445.4	12	F	*v* = k; *v* est. 12.8	12.8	faint
Mar. 13	9475.3	12	F	*v* invisible; other ft. stars seen	<12.9	misty
May 11	9534.4	12	F	*v* 2 m	11.5	
" 23	9546.4	12	F	*v* 2 15; 1 7 *v*	9.9	
June 3	9557.4	12	F	1 3 *v*; *v* 10 15	9.3	
" 7	9561.4	12	F	1 3 *v*; *v* 10 15	9.3	
" 12	9566.4	12	F	1 4 *v*; *v* 6 15	9.6	
Nov. 30	9737.3	12	F	15 6 *v*; *v* 1.5 mg. m	10.5	
Dec. 16	9753.4	12	F	1 4 *v*; *v* 7 15	9.5	

R VIRGINIS 123307 IV

1855.0; α $12^h\, 31^m\, 9^s$; δ $+7° 47'.2$.

Comparison stars; Harvard letters, *Annals*, vol. 37, p. 163, used for observations 1905, April 25, to 1906, July 25, thereafter Hagen numbers used; magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Apr. 25	6961.4	5	W	*v* = e	7.2	
May 8	6974.4	3	W	*v* 3 g; f 5 *v*	8.0	
" 20	6986.4	12	W	*v* 1 m; *v* 7 n; k 4 *v*	9.0	
June 3	7000.4	5	W	*v* 1.5 p; n 8 *v*	10.4	
" 14	7011.4	5	W	p 3 *v*; *v* = g	10.7	moon. diff.
1906						
Apr. 25	7326.4	5	W	*v* = g; p 4 *v*	10.8	
May 26	7357.4	5	W	*v* = f	7.6	
June 27	7389.4	5	W	a 4 *v*	5.9	
July 25	7417.4	3	W	*v* = h	8.2	low
1911						
Apr. 26	9153.4	5	S	6 7 *v*; *v* 5 13	8.7	
May 18	9175.4	5	S	*v* = 13	9.3	

RS URSAE MAJORIS 123459

1855.0; α $12^{h}\ 32^{m}\ 22^{s}$; δ $+59^{\circ}\ 16'.9$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 242. A Harvard photograph was used for verification.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Feb. 12	8350.4	12	F	*v* not seen; o seen	<13.2	
Mar. 5	8371.4	12	F	*v* not seen; l seen	<12.2	moon
“ 10	8376.4	12	F	*v* glimpsed; q 3 *v*	14.0	good seeing
“ 14	8380.4	12	F	*v* only glimpsed; q 4.5 *v*	14.2	q easy
“ 20	8386.4	12	F	q 4 *v*; *v* est. 14.0	14.0	
Apr. 9	8406.4	12	F	*v* on limit; q 4 *v*	14.1	q easy
“ 16	8413.4	12	F	q 4 *v*; *v* est. 14.0	14.0	
“ 24	8421.4	12	F	*v* just visible; q 3 *v*	14.0	
May 8	8435.4	12	F	*v* 2 q; p 1 *v*; o 2 *v*	13.5	
“ 11	8438.4	12	F	m 3 *v*; *v* 3 o	12.9	
“ 23	8450.4	12	F	m 1.5 *v*; *v* 1.5 n; *v* 4 o	12.7	
June 11	8469.4	12	F	*v* = e; b 9 *v*	9.6	
“ 28	8486.4	5	W	*v* 4 b; a 3 *v*	8.4	
July 19	8507.4	3	W	*v* 3 b; a 4 *v*	8.5	
Aug. 7	8526.4	3	W	b 7 *v*; *v* = e	9.4	
“ 14	8533.4	3	W	d 2 *v*; *v* 4 f	10.2	
“ 23	8542.4	3	W	*v* just caught; f not seen	>10.6	low
Sept. 18	8568.4	12	F	*v* 2.5 m; k 2 *v*	12.2	
Oct. 12	8592.4	12	F	o 2 *v*	13.4	faint, low
Nov. 5	8616.4	12	F	*v* < q; almost invisible	<13.7	low
“ 18	8629.4	12	F	*v* not seen; q faintly seen	<13.7	v. clear, l.
Dec. 19	8660.4	12	F	*v* and m not seen	12.6 ±	
1910						
Jan. 10	8682.4	12	F	*v* not seen; q faintly seen	<13.7	
Feb. 1	8704.4	12	F	*v* 1 m; *v* 3 o	12.7	
“ 7	8710.4	12	F	*v* 2.5 m; k 5 *v*	12.3	
Mar. 3	8734.4	12	F	*v* 1 g	10.8	
“ 7	8738.4	12	F	*v* 2 f; d 3 *v*	10.3	
“ 23	8754.4	12	F	b 5 *v*; *v* 4 e	9.2	
Apr. 16	8778.4	12	F	b 2 *v*; *v* 7 e	9.0	
“ 30	8792.4	12	F	*v* 4 f; e 2 *v*	10.2	
Sept. 29	8944.3	12	F	*v* not seen; est. 14.0; q seen	14.0	very clear
Oct. 28	8973.3	12	F	*v* = m; l 4 *v*	12.6	
Nov. 19	8995.4	12	F	b 8 *v*; e 2 *v*	9.6	low, moon
Dec. 2	9008.3	12	F	b 6 *v*; *v* 4 e	9.2	
“ 8	9014.3	12	F	*v* = b	8.7	l. transit
1911						
Jan. 16	9053.3	12	F	*v* 6 e; e 2 *v*	9.5	
“ 24	9061.3	12	F	*v* = f	10.6	
Feb. 21	9089.4	12	F	*v* 4 l; *v* 2 k	11.7	
Apr. 18	9145.4	12	F	*v* on limit, est. 14.1; q easy	14.1	fine seeing
“ 26	9153.4	12	F	*v* on limit, est. 14.0; q seen easily	14.0	
May 18	9175.4	12	F	*v* not seen, est. <14.0; q seen plainly	<14.0	
“ 26	9183.4	12	F	*v* on limit, est. 14.0+; q > *v*	14.0+	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Oct. 13	9323.4	12	F	e 1 *v*; d 2 *v*	10.0	
Nov. 16	9357.4	12	F	k 3 *v*; *v* 3 m	12.2	low
Dec. 13	9384.4	12	F	o 4 *v*; *v* = p	13.5	
1912						
Jan. 20	9422.4	12	F	*v* not seen; q glimpsed	<13.7	
Feb. 8	9441.3	12	F	*v* not seen; est. <14.2; q easy	<14.2	very clear
Mar. 13	9475.3	12	F	n 4 *v*; *v* 2 p	13.2	misty
Apr. 11	9504.4	12	F	h 3 *v*; *v* 2 k	11.6	
May 26	9549.5	12	F	*v* 2 b	8.5	
Oct. 21	9697.4	12	F	*v* not seen, est. <11.5; h seen	<11.5	m., v. clear
Nov. 30	9737.3	12	F	*v* not seen; m faintest seen	<12.6	
Dec. 16	9753.4	12	F	*v* 3 m; k 5 *v*	12.3	

S URSAE MAJORIS 123961 III and IV

1855.0; α $12^h\,37^m\,35^s$; δ $+61°\,53'.3$.

Comparison stars; Hagen numbers used, magnitudes obtained from *Annals*, vol. 37, p. 198, and from the note on page 197 of the same volume.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
May 5	5875.5	5	W	*v* = 22	11.3	
1904						
Nov. 26	6811.3	5	W	8 2 *v*	9.0	low
Dec. 6	6821.3	5	W	8 4.5 *v*	9.2	too low
1905						
Jan. 14	6860.4	—	W	*v* = 3	7.4	
1906						
Jan. 24	7235.4	12	W	*v* 4 13; 8 4 *v*	9.5	
Aug. 22	7445.4	3	W	*v* = 16	10.5	on limit
Oct. 16	7500.4	3	W	*v* 3 6; 5 5 *v*	8.0	
Nov. 6	7521.4	5	W	5 3 *v*; *v* 6 6	7.8	
Dec. 3	7548.4	5	W	5 6.5 *v*; *v* 5.5 6	8.0	
1907						
Mar. 6	7641.4	12	W	16 6 *v*; *v* 10 26	11.0	
Apr. 2	7668.4	12	W	16 2 *v*; *v* = 19	10.8	
" 20	7686.4	12	W	8 5 *v*; *v* 5 9	9.2	
May 11	7707.4	5	W	*v* = 8	8.8	
" 31	7727.4	5	W	3 4 *v*; 5 6 *v*	8.0	
June 7	7734.4	5	W	*v* 4 6; 5 5 *v*	8.0	
" 27	7754.4	3	W	5 3 *v*; *v* 8 6; *v* = 3	7.6	
July 12	7769.4	3	W	5 4 *v*; *v* 6 6	7.8	
" 29	7786.4	3	W	*v* 3 6; 5 8 *v*	8.2	
Aug. 10	7798.4	3	W	*v* = 8	8.8	hazy
" 18	7806.4	3	W	8 3 *v*	9.1	
Sept. 14	7833.4	3	W	*v* barely seen; 16 4.5 *v*	11.0	poor
" 30	7849.4	3	W	*v* barely seen, <22	<11.3	low

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Nov. 16	9357.4	3	F	5 2 *v*; *v* 4 6	7.8	finder used
1912						
Feb. 13	9446.4	12	F	28 1 *v*; *v* 1 26	11.9	
Mar. 13	9475.4	12	F	7 3 *v*; *v* 3 9	9.1	
May 31	9554.4	5	S	2 5 *v*; *v* = 5	7.6	

RU VIRGINIS 124204 VI

1855.0; α $12^h\ 39^m\ 56^s$; δ $+4°\ 56'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 24	8421.4	12	F	*v* 3 22; 18 9 *v*	12.0	reddish
May 8	8435.4	12	F	20 1 *v*; *v* 2 22	11.8	
" 23	8450.5	12	F	*v* = 19	11.5	
June 11	8469.4	12	F	18 1 *v*; *v* 2 19	11.4	
" 19	8477.4	12	F	18 2 *v*; *v* 2 19	11.4	

U VIRGINIS 124606 II

1855.0; α $12^h\ 43^m\ 45^s$; δ $+6°\ 20'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1901	241					
May 7	5512.4	12	W	19 3 *v*	12.3	
" 15	5520.4	12	W	*v* 2 20	12.1	
" 23	5528.4	12	W	*v* 1 19	11.9	
June 5	5541.5	12	W	*v* 3.5 18; *v* 2 17	11.5	
1902						
Jan. 12	5762.7	12	W	*v* 5 10 5 11	10.2	
Mar. 18	5827.4	5	W	*v* 3 4; 3 4 *v*	8.2	
" 22	5831.4	12	W	3 4 *v*; *v* 5.5 4	8.0	
" 26	5835.3	5	Wn	3 4.5 *v*; *v* 3 4	8.2	
Apr. 12	5852.5	3	W	4 2.5 *v*; *v* 4 5	8.8	
" 16	5856.4	5	W	5 4 *v*; *v* 5 8	9.4	
" 30	5870.3	5	Wn	*v* = 9	9.7	
May 1	5871.4	5	W	*v* = 10	10.3	
" 14	5884.4	5	W	*v* = 17	11.7	moon, hazy
June 26	5927.4	12	W	*v* = 21	12.5	faint, low

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Mar. 19	6193.4	12	W	*v* = 4; *v* 4 5	8.6	
" 26	6200.4	12	W	phot. comp. with 4	8.3	
Apr. 18	6223.5	12	W	*v* = 3	7.6	
May 11	6246.3	5	W	3 3 *v*; *v* 2 4	8.2	
" 22	6257.4	12	W	*v* 3 5	8.8	
1904						
Apr. 7	6578.4	12	W	*v* = 11	10.4	
May 4	6605.4	12	W	9 2 *v*; 9 = *v*	9.6	
1906						
Apr. 25	7326.4	5	W	*v* = 17	11.7	
" 30	7331.4	5	W	*v* just caught; 17 seen	<11.7	
May 14	7345.4	12	W	19 2 *v*	12.2	
" 26	7357.4	5	W	*v* not seen; 17 seen	<11.7	
1912						
Apr. 11	9504.4	5	S	3 6 *v*; *v* 4 4	8.2	
" 20	9513.4	5	S	3 2 *v*; *v* 8 4	7.8	
May 3	9526.4	5	S	3 2 *v*; *v* 8 4	7.8	
" 11	9534.4	5	S	3 1 *v*; *v* 8 4	7.8	
" 31	9554.4	5	S	3 8 *v*; *v* 8 5	8.4	moon
June 13	9567.4	5	S	4 3 *v*; *v* 1 5	9.0	

RY DRACONIS 125266

1855.0; α 12^h 50^m 43^s; δ +66° 46′.8.

Comparison stars; a *Durchmusterung* chart was used. The magnitudes were obtained by estimates based on B. D. 67° 773, mg. 5.5, *Annals*, vol. 50, and B. D. 68° 703, mg. 6.7, *Annals*, vol. 54. References are also found to other catalogs.

The star is quite red.

Des.	Mg.	B. D.	Potsdam, vol. XVI
r	5.5	67° 773	5.4 mg.
s	6.7	68 703	6.7
p	6.7	65 913	
k	7.5	66 768	7.8
n	7.7	66 793	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
May 31	7727.4	5	W	*v* 5 n; p 3 *v*	7.1	
June 12	7739.4	5	W	p 4 *v*; *v* 1 k	7.3	
July 12	7769.4	3	W	p 3 *v*; *v* 5 k	7.0	
" 15	7772.4	3	W	*v* 3 k; p 6 *v*	7.2	
" 16	7773.4	3	W	*v* 5 k; p 4 *v*	7.1	moon, hazy
" 19	7776.4	3	W	p 4 *v*; *v* 5 k	7.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
July 29	7786.4	3	W	p 4 *v*; *v* 3 k	7.2	
" 30	7787.4	3	W	p 4 *v*; *v* 5 k	7.1	
" 31	7788.4	3	W	p 3 *v*; *v* 4 k; s 2 *v*	7.0	
Aug. 1	7789.4	3	W	s 3 *v*; p 4 *v*; *v* 4 k	7.1	
" 4	7792.4	3	W	p 5 *v*; s 2 *v*; *v* 6.5 k	7.0	
" 7	7795.4	3	W	s 5 *v*	7.2	cloudy
" 8	7796.4	3	W	s 4 *v*; p 3 *v*; *v* 3 k	7.1	
" 10	7798.4	3	W	s 5 *v*; p 4 *v*; *v* 3 k	7.2	
" 11	7799.4	3	W	p 5 *v*; *v* 3 k	7.2	
" 12	7800.4	3	W	p 5 *v*; *v* 3 k	7.2	
" 13	7801.4	3	W	p 4 *v*; *v* 4 k	7.1	
" 14	7802.4	3	W	p 6 *v*; *v* 3 k	7.2	
" 18	7806.4	3	W	p 2 *v*; s 3 *v*; *v* 7 k	6.9	
" 19	7807.4	3	W	p 4 *v*; *v* 4 k	7.1	
" 22	7810.4	3	W	p 3 *v*; s 4 *v*; *v* 6 k	7.0	full moon
" 28	7816.4	3	W	p 4 *v*; *v* 4 k	7.1	
Sept. 14	7833.4	3	W	p 4 *v*; *v* 4 k	7.1	hazy, moon
" 30	7849.4	3	W	*v* 2 k; p 5 *v*	7.3	
1912						
May 26	9549.4	12	F	*v* 2 n; *v* 2 k; p 1 mg. *v*	7.5	quite red

RT VIRGINIS 125705a IV

1855.0; α $12^h\ 55^m\ 17^s$; δ $+5°\ 58'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 24	8421.4	12	F	*v* = 10; 10 1.5 *v*; *v* 2 10; 8 5 *v*	9.4	*v* quite red
May 11	8438.4	5	W	4 1.5 *v*; *v* = 5	8.7	
June 11	8469.4	5	W	*v* = 4	8.6	
" 19	8477.4	5	W	4 3 *v*; 5 = *v*	8.8	

W VIRGINIS *132002* I

1855.0; α $13^h\ 18^m\ 33^s$; δ $-2°\ 37'.4$.

Comparison stars; on map with V Virginis.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Apr. 28	6964.4	12	W	*v* 1 4	10.1	
May 20	6986.4	12	W	*v* 4 4	9.8	
1907						
June 12	7739.4	5	W	*v* 2 4	10.0	

V VIRGINIS *132202* I

1855.0; α $13^{h}\ 20^{m}\ 19^{s}$; δ $-2°\ 25'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Apr. 28	6964.4	12	W	$v = 2$	9.4	
May 20	6986.4	12	W	$v = 2$	9.4	
1906						
Apr. 26	7327.4	5	W	v not seen; 12 seen	<12.2	
May 14	7345.4	12	W	v not seen; 19 seen	<12.9	
1907						
June 12	7739.4	5	W	v 4 2; 1 10 v	8.7	
1912						
Apr. 11	9504.4	5	S	2 4 v; v 2 3	9.8	
" 20	9513.4	5	S	2 6 v; v 2 3	9.9	
May 11	9534.4	5	S	8 2 v; v 2 10	11.3	
" 31	9554.4	5	S	v invisible; 10 seen	<11.6	moon

RR URSAE MAJORIS 132262

1855.0; α $13^{h}\ 20^{m}\ 45^{s}$; δ $+63°\ 8'.2$.

Comparison stars; a *Durchmusterung* map with additional faint stars was used. The magnitudes were based upon B. D. 63° 1071, mg. 8.0, *Annals,* vol. 54, and B. D. 63° 1076, mg. 8.0, *Annals,* vol. 54.

Des.	Mag.	α 1900	δ 1900	B. D.
m	9.0	$13^{h}\ 21^{m}\ 26^{s}$	+62° 58′.6	63° 1073
b	9.5	23 13	63 14.5	63 1075
1	9.9	22 56	62 42.7	62 1292
d	10.6	24 4	63 5.0	
k	11.2	23 58	62 52.0	
8	11.5	21 26	62 46.4	
l	11.6	23 37	62 51.7	
5	11.8	21 42	62 50.8	
9	11.9	21 40	63 4.6	
7	12.1	20 26	62 45.1	
13	12.8	21 7	63 0.1	
12	13.2	22 8	62 58.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
May 11	8438.4	12	F	v 12.5 12; 5 2 v	12.0	
" 23	8450.4	12	F	v 2 8; v 5 5	11.3	
June 11	8469.4	12	F	m 2 v; m = v	9.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
June 28	8486.4	5	W	*v* 1 m	8.9	
July 21	8509.4	3	W	b 5 *v*; *v* = 1	10.0	
Aug. 7	8526.4	3	W	*v* = 1	9.9	
" 14	8533.4	3	W	1 4 *v*	10.3	on limit
Sept. 3	8553.4	3	W	*v* not seen, est. <11.5	<11.5	
" 18	8568.4	12	F	12 2 *v*	13.4	quite faint
Oct. 12	8592.4	12	F	*v* barely visible; 12 faintly seen	<13.2	low
Nov. 5	8616.3	12	F	*v* not seen; 12 faintest seen	<13.2	
" 18	8629.3	12	F	*v* not seen; 12 faintest seen	<13.2	
Dec. 6	8647.4	12	F	*v* not seen; 12 faintest seen	<13.2	l. transit
" 19	8660.4	12	F	*v* not seen; 7 faintest seen	<12.1	l. transit
1910						
Jan. 10	8682.4	12	F	*v* = 8; *v* 2.5 5	11.5	
Feb. 1	8704.4	12	F	m 2 *v*; b 1.5 *v*; m 3 *v*	9.4	
" 7	8710.4	12	F	*v* = m	9.0	
Mar. 3	8734.4	12	F	*v* = 1; m 6 *v*	9.8	
" 7	8738.4	12	F	m 7 *v*; *v* 4 1	9.6	
" 23	8754.4	12	F	*v* 4 1; m 15 *v*	10.0	
Apr. 2	8764.4	12	F	*v* 6 8; *v* 2 k; d 4 *v*	11.0	
" 30	8792.4	12	F	5 4 *v*; *v* 4 12	12.5	
Sept. 29	8944.3	12	F	1 2 *v*; *v* 8 d; b 4 *v*	9.9	
Oct. 26	8971.4	12	F	m 8 *v*	9.8	*v* bright
Nov. 19	8995.4	12	F	*v* 5 8	11.0	faint
Dec. 2	9008.4	12	F	*v* = 8; *v* 4 5	11.4	
" 3	9009.3	12	F	*v* 2 5; 8 2 *v*	11.6	low
1911						
Jan. 5	9042.3	12	F	*v* not surely seen, <12	<13.2	12 faint
" 24	9061.3	12	F	*v* not seen; 12 faintest seen	<13.2	
Feb. 21	9089.4	12	F	*v* not seen; <14.0 est.	<14.0	
Apr. 18	9145.4	12	F	*v* 2 8; *v* 3 5	11.4	
" 26	9153.4	12	F	*v* = 1; b 3 *v*	9.8	
May 18	9175.4	12	F	*v* 2 m; *c 9 *v*	8.8	
" 26	9183.4	12	F	*v* 2 m; †o 8 *v*	8.8	
Oct. 13	9323.4	12	F	*v* not seen; 12 faintest seen	<13.2	low
Nov. 16	9357.4	12	F	*v* not seen; 12 faintest seen	<13.2	l. transit
Dec. 13	9384.4	12	F	*v* = l	11.6	
1912						
Jan. 20	9422.4	12	F	*v* = 1	9.9	
Feb. 8	9441.4	12	F	*v* = k	11.2	
Mar. 13	9475.4	12	F	*v* 2 5; *v* 4 9; l 4 *v*	11.7	
Apr. 11	9504.4	12	F	12 6 *v*; *v* est. 13.5	13.6	
May 26	9549.5	12	F	*v* not seen; 13 seen dimly	<12.8	
June 8	9562.4	12	F	*v* very faint, est. 14.0 or 13.8	13.9	very clear
Oct. 21	9697.4	12	F	*v* 5 k; *v* about = d	10.6	poor, moon
Nov. 1	9708.4	12	F	k 2 *v*; *v* 2 l	11.4	l., v. clear
" 30	9737.3	12	F	*v* not seen; 9 faintest seen	<11.9	low
Dec. 16	9753.4	12	F	*v* not seen; 13 faintest seen	<12.8	l., v. clear

*c, B. D. 63° 1076, mg. 8.0, *Annals*, vol. 54.

†o, B. D. 63 1071, 8.0, *Annals*, vol. 54.

S VIRGINIS 132706 I

1855.0; α $13^h\,25^m\,26^s$; δ $-6^\circ\,26'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199. As star no. 32 is outside the limit of this table, it was found by extrapolation to have magnitude 12.8, which was also verified by observation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 17	6588.4	—	W	*v* = 23	12.0	
1906						
May 1	7332.4	5	W	*v* not seen; 19 seen	<11.5	moon
1909						
Apr. 24	8421.4	12	F	23 1 *v*; *v* 3 24	12.0	
May 8	8435.4	12	F	29 3 *v*; *v* 1 30	12.4	
" 12	8439.4	12	F	*v* 2 32; 29 2 *v*	12.6	
" 23	8450.5	12	F	29 2 *v*; *v* 3 32	12.5	
June 11	8469.4	12	F	31 2 *v*; 29 5 *v*	12.7	
" 19	8477.4	12	F	29 2 *v*	12.5	*v* diff.
1912						
May 10	9533.5	12	F	23 1 *v*; *v* 2 24	12.0	

T URSAE MINORIS 133273

1855.0; α $13^h\,31^m\,42^s$; δ $+74^\circ\,10'.2$.

Comparison stars; a *Durchmusterung* map was used with additional faint stars, which were later compared with the Harvard list given in *Annals*, vol. 57, p. 243. A few faint stars were used which did not occur on this list. Their magnitudes were obtained by comparison with the Harvard stars and by direct estimation. Their positions were found by measurements with the micrometer and on a photograph. The magnitudes of the stars m and n, and also the position of o, differ somewhat from the values in vol. 57.

Des.	Mg.	α 1900			δ 1900	
m	11.8	13^h	34^m	19^s	$+73^\circ$	$43'.0$
p	12.6		31	42		49.0
n	12.6		31	34		51.7
o	12.8		32	10		53.4
w	13.2		33	25		47.3
x	13.5		32	43		50.4
y	13.7		32	26		48.7

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Oct. 19	8234.4	5	W	*v* = f	10.4	hazy
Nov. 1	8247.4	5	W	*v* 2 f	10.2	moon
“ 20	8266.4	5	W	f 3 *v*	10.7	
Dec. 15	8291.4	5	W	*v* about = h	11.4 ±	too low
“ 18	8294.4	5	W	h 2 *v*	11.6	
1909						
Jan. 22	8329.4	5	W	*v* notseen; m faintest seen	<11.8	
Sept. 17	8567.4	12	F	*v* 3 g; *v* 2 f	10.3	
Oct. 6	8586.4	4	W	*v* 2 f	10.2	
“ 16	8596.4	5	W	f 4 *v*; *v* = g	10.8	
Nov. 5	8616.4	5	W	*v* = l	11.5	
Dec. 6	8647.4	12	F	*v* 2.5 n; m 6 *v*	12.4	
“ 19	8660.4	12	F	*v* bet. n and o, nearly = p	12.6	*v* faint
1910						
Jan. 10	8682.4	12	F	*v* = p; n 1 *v*	12.6	
Feb. 1	8704.4	12	F	*v* est. 13.5–13.8	13.6	
“ 7	8710.4	12	F	n 6 *v*	13.2	
Mar. 3	8734.4	12	F	*v* = y; w 2 *v*	13.6	*v* faint
“ 7	8738.4	12	F	w 1 *v* 1 y; *v* est. 13.9	13.7	ft., on lim.
“ 26	8757.3	12	F	w 2 *v*	13.4	very ft., m.
Apr. 2	8764.4	12	F	*v* 1.5 w	13.0	
“ 30	8792.4	12	F	*v* = n; *v* 8 w	12.5	
Oct. 3	8948.4	12	F	*v* 1 m	11.7	
“ 21	8966.4	12	F	*v* 3 p	12.3	
“ 31	8976.3	12	F	*v* = p	12.6	
Nov. 19	8995.4	12	F	o 3 *v*	13.1	on limit
Dec. 2	9008.4	12	F	n 7 *v*	13.3	
1911						
Jan. 24	9061.3	12	F	*v* = y; *v* est. 13.8	13.8	very faint
Feb. 21	9089.4	12	F	o 2 *v*	13.0	
Apr. 18	9145.4	12	F	*v* = h	11.4	
“ 26	9153.4	12	F	*v* 1.5 f; *v* = f; *v* 10 k	10.4	
May 18	9175.4	3	F	b 5 *v*; *v* = c	9.2	finder used
“ 26	9183.4	12	F	a 2 *v*; *v* 2 b	8.6	
Oct. 13	9323.4	12	F	*v* = y; w 2 *v*; n 10 *v*	13.6	very faint
Nov. 16	9357.4	12	F	*v* not seen; y faintest seen	<13.7	
Dec. 13	9384.4	12	F	*v* = y; *v* est. 13.8	13.8	
1912						
Jan. 20	9422.4	12	F	*v* = n	12.6	
Feb. 8	9441.4	12	F	m 4 *v*; *v* 4 n	12.2	
Mar. 13	9475.4	12	F	*v* 2 f; c 10 *v*	10.2	
Apr. 11	9504.4	12	F	b 2 *v*; *v* 2 c	9.0	
May 26	9549.5	12	F	*v* 4 h; *v* = g	10.8	
June 1	9555.4	12	F	*v* 2 h	11.2	faint, moon
“ 3	9557.5	12	F	k 1 *v*; *v* = l	11.5	
Oct. 21	9697.4	12	F	*v* not seen; o faintest seen	<12.8	
Nov. 1	9708.4	12	F	x 2 *v*	13.7	on limit
“ 30	9737.3	12	F	*v* = w	13.2	
Dec. 12	9749.3	12	F	o 2 *v*	13.0	low

R CANUM VENATICORUM 134440 III

1855.0; α $13^{h}\ 42^{m}\ 43^{s}$; δ +40° 15′.9.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199. Star no. 1, B. D. 40° 2701, for which no Hagen grade is given, has magnitude 7.82, *Annals*, vol. 54.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
June 25	7022.4	5	W	*v* 5 3; 2 10 *v*	8.9	
July 3	7030.4	–	W	3 2 *v*; *v* 5 5	9.3	
" 20	7047.4	3	W	*v* 2 5; 3 8 *v*	9.8	
Aug. 1	7059.4	3	W	8 2 *v*; *v* 5 9	10.1	
" 17	7075.4	3	W	8 5 *v*; *v* 6 9	10.2	
1906						
Apr. 26	7327.4	5	W	*v* = 1	7.8	
May 23	7354.4	5	W	*v* 7 3; 2 5 *v*	8.6	
June 24	7386.4	5	W	*v* 3 5; 3 1 *v*	9.4	
July 11	7403.4	3	W	*v* = 7; *v* = 8	10.0	very hazy
Aug. 15	7438.4	3	W	*v* = 16	11.5	*v* just seen
1907						
June 7	7734.4	5	W	8 1 *v*; *v* 4 9	10.1	
" 27	7754.4	5	W	*v* = 9	10.4	
July 13	7770.4	3	W	*v* = 16	11.5	
" 29	7786.4	3	W	9 5 *v* 5 16	11.0	near limit
Aug. 11	7799.4	3	W	*v*, barely seen, = 16	11.5	good seeing
" 28	7816.4	3	W	9 5 *v*; *v* 5 16; *v* barely seen	11.0	good seeing
1909						
Apr. 24	8421.4	5	W	*v* est. 12.5; 21 seen	12.5	on limit
May 8	8435.4	5	W	doubtful if seen; <12.0; 17 ft.	<12.0	
" 31	8458.4	12	F	*v* = 17	11.7	moon
June 11	8469.4	12	F	14 2 *v*; *v* 1 16	11.4	
" 24	8482.4	12	F	*v* = 13; *v* 2 14	10.9	

U URSAE MINORIS 141567

1855.0; α $14^h\ 14^m\ 11^s$; δ $+67°\ 27'.9$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 244.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 31	6877.3	12	W	*v* = f	10.7	
Feb. 7	6884.4	5	W	f 3 *v*; *v* 5 h	10.8	
" 27	6904.4	12	W	*v* 5 f; d 5 *v*	10.1	
Mar. 17	6922.3	12	W	phot. comp. with b, c, d	9.0	moon, hazy
Apr. 1	6937.4	12	W	c 4 *v*; *v* 5 d	9.0	
" 1	6937.4	12	W	phot. comp. with b, c, d	8.9	
" 22	6958.4	5	W	*v* = c	8.5	
May 9	6975.4	12	W	*v* 2 c	8.3	hazy
" 23	6989.4	12	W	c 2 *v*; *v* 10 d	8.6	
June 8	7005.4	5	W	c 5 *v*; *v* 5 d	9.0	
Aug. 5	7063.4	3	W	*v* 6 h	10.4	h just seen
Sept. 22	7111.4	5	W	h 3 *v*	11.3	low, poor
Nov. 10	7160.4	5	W	f 5 h 5 *v*	11.3	
" 25	7175.4	12	W	h 2 *v*	11.2	
Dec. 14	7194.4	12	W	*v* = f	10.7	
1906						
Jan. 26	7237.4	12	W	*v* 3 d; c 7 *v*	9.2	
Feb. 24	7266.4	12	W	c 3 *v*; *v* 6 d	8.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Mar. 24	7294.4	12	W	*v* 4 c	8.1	
May 10	7341.4	—	W	*v* 4 d; b 10 *v*	9.2	
Aug. 22	7445.4	3	W	*v* barely seen; f seen clearly	<10.7	
Nov. 6	7521.4	12	W	f 1 *v*	10.8	
Dec. 23	7568.4	12	W	*v* 4 d; c 7 *v*	9.2	
1907						
Jan. 22	7598.4	12	W	*v* 6 d; c 4 *v*	8.9	
Feb. 23	7630.4	12	W	c 1.5 *v*	8.6	
Mar. 6	7641.4	12	W	c 3 *v*; *v* 8 d	8.8	
“ 25	7660.4	12	W	c 4.5 *v*; *v* 6 d	8.9	
Apr. 27	7693.4	12	W	*v* 1 d	9.4	
“ 27	7693.4	12	W	phot. comp. with d	9.6	
July 30	7787.4	3	W	*v* and h barely caught; *v* est. 11.0+	11.0+	
Aug. 13	7801.4	3	W	*v* = h	11.0	just caught
1908						
Nov. 29	8275.4	5	W	*v* 2 b	8.0	hazy, low
1909						
Jan. 18	8325.4	5	W	*v* 2 d	9.3	
“ 28	8335.4	5	W	*v* 8 f; *v* = d	9.7	
Feb. 17	8355.4	5	W	f 2 *v*; *v* 5 h	10.7	
Mar. 11	8377.4	5	W	h 5 *v*; *v* 10 l	11.4	
Apr. 7	8404.4	5	W	h 10 *v*	12.0	just seen, m.
“ 22	8419.4	5	W	*v* barely seen, est. 12.5; k seen	12.5	
May 8	8435.4	5	W	*v* 3 l	12.1	just seen, h.
“ 23	8450.4	5	W	*v* = g; h 5 *v*	11.4	
June 11	8469.4	5	W	*v* 3 f	10.4	
“ 19	8477.4	5	W	*v* 4 f; e 4 *v*	10.4	
July 19	8507.4	3	W	d 4 *v*; *v* = e	10.0	
Aug. 7	8526.4	3	W	d 2 *v*; *v* 5 e	9.6	
“ 14	8533.4	3	W	*v* = d	9.5	
“ 23	8542.4	3	W	*v* 2 d; e 8 *v*	9.3	
Sept. 18	8568.4	5	W	c 2 *v*	8.7	
Oct. 8	8588.4	4	W	*v* 1 c	8.4	
“ 16	8596.4	5	W	*v* 0.5 c	8.4	
“ 29	8609.4	5	W	*v* 1 c; b 1 *v*	8.4	full moon
Nov. 6	8617.4	5	W	c 3 *v*; *v* 9 d	8.7	
“ 18	8629.4	4	W	c 5.5 *v*	9.0	low, hazy
1910						
Jan. 19	8691.4	5	W	*v* = h	11.0	too hazy
Mar. 5	8736.4	5	W	*v* = l ±	12.4 ±	hazy, diff.
Apr. 2	8764.4	12	F	g 6 *v*; *v* 6 l	11.9	
“ 16	8778.4	12	F	*v* on limit; est. <11.0; h and f seen	<11.0	
“ 30	8792.4	12	F	h 4 *v*; *v* = g	11.4	
1911						
Nov. 16	9357.4	12	F	f 1 *v*; *v* 2 h	10.8	
1912						
Feb. 13	9446.4	12	F	f 2 *v*; *v* 1 h	10.9	
Mar. 13	9475.4	12	F	d 4 *v*; *v* 8 f.	9.9	

S BOOTIS 141954 III

$1855.0;\quad \alpha\quad 14^h\ 18^m\ 1^s;\quad \delta\quad +54^\circ\ 28'.3.$

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198. As star no. 31 is outside the limit of this table, its magnitude was found by extrapolation to be 13.6. Star no. 1, B. D. 54° 1678, for which no Hagen grade is given, has magnitude 7.26, *Annals*, vol. 54.

Date	J. D.	Inst.	Obs	Comparisons	Adopted value	Remarks
1902	241					
May 16	5886.4	5	W	*v* = 4	8.3	
" 31	5901.5	5	W	*v* 2.5 4; 1 6 *v*	8.0	
June 28	5929.4	5	W	*v* 2 4; 4 2 *v*; *v* 5 6	8.3	
July 23	5954.4	5	W	6 4 *v*; *v* 6 9	9.3	
1904						
Sept. 30	6754.4	5	W	*v* 5 11; 6 8 *v*	9.6	
1905						
Apr. 25	6961.4	5	W	*v* 3 7; 5 3 *v*	9.2	
May 8	6974.4	5	W	4 4 *v*; *v* = 5	8.8	
" 20	6986.4	5	W	4 1 *v*	8.4	clouds
1907						
June 8	7735.4	5	W	14 1 *v*; *v* 1 15	10.6	
July 12	7769.4	3	W	5 3 *v*; *v* 5 7	9.2	
" 29	7786.4	3	W	4 4 *v*; *v* = 6	8.8	
Aug. 9	7797.4	3	W	4 3 *v*	8.6	very hazy
" 22	7810.4	3	W	6 3 *v*; 4 7 *v*	9.0	full moon
Sept. 14	7833.4	3	W	*v* = 9	10.0	poor, m.
Oct. 2	7851.4	3	W	*v* = 12	10.4	low
1909						
Mar. 22	8388.4	5	W	14 2 *v*; 15 1 *v*	10.8	
Apr. 9	8406.4	5	W	*v* = 22	11.9	
" 23	8420.4	5	W	*v* = 22	11.9	
May 8	8435.4	5	W	*v* not seen; 22 seen	<11.9	
" 25	8452.4	12	F	27 2.5 *v*; *v* = 30	13.2	faint
June 11	8469.4	12	F	25 4 *v*; 27 2 *v*	13.1	
" 24	8482.4	12	F	25 1 *v*; 22 3 *v*	12.5	
Sept. 18	8568.4	12	F	*v* = 7; *v* 1.5 7; 6 2 *v*	9.4	
" 25	8575.4	5	W	4 4 *v*; *v* = 5	8.8	
Oct. 8	8588.4	4	W	2 4 *v*; *v* 1 4	8.0	
" 19	8599.4	5	W	*v* 1 4	8.2	
Nov. 1	8612.4	5	W	4 3 *v*; 5 2 *v*	8.8	hazy, low
" 26	8637.4	12	F	7 1 *v*; *v* 2 8	9.8	low, moon
Dec. 6	8647.2	12	F	14 1.5 *v*; *v* 2.5 15	10.6	
" 19	8660.4	12	F	*v* = 19; 15 6.5 *v*	11.3	low, moon
1910						
Aug. 4	8888.4	9	F	*v* 4 14; *v* 2 12; 7 4 *v*	10.1	Granville, O.
Sept. 29	8944.4	12	F	21 1 *v*; *v* 1 22	11.8	very clear
Oct. 11	8956.4	12	F	*v* = 27	12.9	faint, moon
" 24	8969.3	12	F	*v* = 27	12.9	
Dec. 3	9009.2	12	F	*v* = 31	13.6	rather l., ft.
1911						
Apr. 18	9145.4	12	F	4 4 *v*; *v* 2 5	8.6	
" 29	9156.4	12	F	*v* = 5	8.8	
May 18	9175.4	12	F	4 6 *v*; *v* 4 9	9.2	
" 30	9187.4	12	F	*v* 2 7; 6 2 *v*	9.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Oct. 13	9323.3	12	F	19 3 v; v 2 21	11.5	
" 23	9333.3	12	F	14 4 v; 15 1.5 v	10.9	
Nov. 6	9347.3	12	F	11 3 v; v 2 14	10.4	
" 13	9354.3	12	F	v 2 14; 12 0.5 v	10.4	
Dec. 7	9378.3	12	F	5 3 v; v 3 7	9.2	
1912						
Apr. 11	9504.4	12	F	22 4 v; v 6 25	12.2	

R CAMELOPARDALIS 142584 III

1855.0; α $14^h\,28^m\,54^s$; δ $+84°\,29'.2$.

Comparison stars; Hagen numbers used, magnitudes obtained from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Apr. 22	6958.4	5	W	1 1 v	8.3	
May 3	6969.4	5	W	1 2 v; v 4 4	8.6	
" 20	6986.4	12	W	1 9 v; 4 2 v; v 6 7	9.2	
June 8	7005.4	5	W	v = 7	9.7	
1906						
Mar. 5	7275.4	12	W	v = 7	9.7	
Apr. 27	7328.4	5	W	v not seen; 23 seen	<12.5	
Nov. 6	7521.4	5	W	1 4 v; v 5 4	8.7	
1907						
Oct. 8	7857.4	5	W	v = 14; 13 4 v	11.5	
Nov. 11	7891.4	4	W	v not seen; 24 caught	<12.6	
Dec. 24	7934.4	4	W	v not seen; 11 seen	<10.9	
1911						
Nov. 16	9357.4	3	F	1 2 v; v 4 4; v red	8.6	finder used
Dec. 7	9378.3	12	F	v 4 1	7.8	v quite red
1912						
Feb. 12	9445.4	12	F	v = 7	9.7	
Mar. 13	9475.4	12	F	13 2 v; v 1 14	11.4	very clear

V BOOTIS 142539 IV

1855.0; α $14^h\,23^m\,54^s$; δ $+39°\,30'.5$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Aug. 1	7059.4	3	W	v = 17	9.9	
" 17	7075.4	3	W	11 2 v	9.3	
" 27	7085.4	3	W	v 3 11	8.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Sept. 23	7112.4	5	W	v 3 5; 4 2 v	8.1	
Oct. 6	7125.4	5	W	3 5 v; v 4 6	8.2	
" 28	7147.3	3	W	3 2.5 v	7.8	low, poor
" 30	7149.4	3	W	3 3 v; v 4.5 6	8.1	
1906						
Feb. 23	7265.4	–	W	v 2 20; 16 6 v	10.3	
Apr. 16	7317.4	–	W	v 3 20; 16 4 v	10.2	
May 18	7349.4	5	W	v 4 9; v 1 11	8.8	hazy
1907						
June 8	7735.4	5	W	3 4 v; v 10 9	8.0	
July 13	7770.4	3	W	v 3 16; 9 3 v	9.4	
" 29	7786.4	3	W	v 2 16; 11 6 v	9.6	
Aug. 10	7798.4	3	W	16 5 v; $v = 20$	10.4	hazy
" 22	7810.4	3	W	v barely seen; 20 caught	<10.5	full moon
1909						
Apr. 16	8413.4	5	W	3 6 v; v 3 6	8.4	
" 23	8420.4	5	W	v 10 9; 3 6 v; v 4 6	8.2	
May 11	8438.4	5	W	3 2 v; v 6 6	8.0	
" 25	8452.4	5	W	3 4 v; v 5 6	8.2	
June 24	8482.4	5	W	$v = 3$	7.6	
July 19	8507.4	3	W	$v = 3$	7.6	
Aug. 6	8525.4	3	W	3 8 v; $v = 6$	8.6	
" 14	8533.4	3	W	$v = 11$	9.1	
" 23	8542.4	3	W	$v = 11$	9.1	
Sept. 14	8564.4	5	W	9 4 v; v 3 16	9.4	
Oct. 8	8588.4	4	W	20 2 v; v 2 23	10.8	

R BOOTIS 143227 III

1855.0; α $14^h 30^m 48^s$; δ $+27° 22'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199. Star no. 1, for which no Hagen grade is given, is B. D. 28° 2348, mg. 6.99, *Annals,* vol. 54. One additional star, a, is used; a = B. D. 27° 2388, mg. 5.90, *Annals,* vol. 50.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Apr. 19	6590.4	3	W	a 6 v; v 3 1	6.6	finder used
1905						
May 24	6990.4	5	W	$v = 4$; 3 3 v	9.0	
June 14	7011.4	5	W	v 10 2; 1 5 v	7.4	
July 9	7036.4	3	W	v 3 1	6.7	
" 17	7044.4	3	W	v 4 1	6.6	
" 18	7045.4	3	W	v 3.5 1	6.6	
" 27	7054.4	3	W	1 3 v; v 9 2	7.4	
Aug. 5	7063.4	3	W	1 4 v; v 6 2	7.6	
" 18	7076.4	3	W	2 4 v; v 6.5 3	8.5	
Sept. 1	7090.4	5	W	3 3 v; v 1 4	9.0	
" 21	7110.4	5	W	$v = 9$	10.6	low, poor

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Apr. 26	7327.4	5	W	*v* 5 10; *v* = 7	10.2	
May 23	7354.4	5	W	16 1 *v*	11.8	
July 16	7408.4	3	W	doubtful if seen; 10 barely seen	<10.8	hazy
Aug. 15	7438.4	3	W	*v* 2 3; 2 1 *v*	8.6	
Sept. 1	7455.4	3	W	*v* 6 2; 1 10 *v*	7.9	

V LIBRAE *143417* I

1855.0; α 14h 32m 18s; δ −17° 1′.8.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annales*, vol. 57, p. 245. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
May 11	9534.4	5	S	13 2 *v*; *v* 2 16	10.7	
" 31	9554.4	5	S	13 1 *v*; *v* 5 16	10.5	moon
June 13	9567.4	5	S	3 2 *v*; *v* 2 5	8.8	

RR BOOTIS 144339

1855.0; α 14h 41m 29s; δ +39° 55′.1.

Comparison stars; a *Durchmusterung* map was used, with additional stars, the positions of which are given in the table below. The magnitudes were determined by comparison and direct estimation, using as a basis B. D. 39° 2800, mg. 9.5, *Annals*, vol. 54, and B. D. 39° 2799, mg. 10.3, *Annals*, vol. 70.

Des.	Mg	α 1900			δ 1900		B. D.		*Lund* A.G.
4	8.8	14h	41m	1s	+39°	26′.1	39°	2797	6208
1	9.5		42	51		40.2	39	2800	6219
27	9.7		42	50		52.2	40	2815	6218
3	9.9		41	39		34.1	39	2798	6210
e	10.1		42	28		34.4			
2	10.3		42	26		48.5	39	2799	
f	10.8		43	18		35.4			
k	11.0		42	7		38.2			
c	12.2		42	34		45.0			
g	12.2		42	59		44.3			

Des.	Mg.	α 1900			δ 1900	B. D.	*Lund A. G.*
a	12.3	14^h	43^m	1^s	41.4		
b	12.6		43	9	43.7		
d	12.6		42	38	45.8		
h	13.4		42	42	43.1		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
June 11	8469.4	12	F	*v* = g	12.2	
" 24	8482.4	12	F	f 4 *v*; k 2 *v*; *v* 12.5 a	11.2	
Sept. 18	8568.4	12	F	27 1 *v*; *v* 3.5 2	9.9	
Oct. 12	8592.4	12	F	*v* 10 e; f 7 *v*	11.3	
Nov. 3	8614.3	12	F	*v* 2 g	12.0	both faint
1910						
Aug. 4	8888.4	9	F	1 2 *v*; *v* 2 27; *v* 4 2	9.7	
Sept. 29	8944.3	12	F	*v* = 27	9.7	
Oct. 11	8956.3	12	F	*v* 2 2; 27 5 *v*	10.2	
" 24	8969.3	12	F	*v* = f; *v* 3.5 k	10.7	
1911						
Apr. 15	9142.5	12	F	1 3 *v*; *v* = e	10.0	
" 29	9156.4	12	F	2 7 *v*; k 2 *v*	11.1	
May 18	9175.4	12	F	*v* 4 g; *v* 2.5 e	11.9	*v* faint
" 30	9187.4	12	F	*v* = a; *v* 4 b	12.2	thin clouds
Oct. 13	9323.3	12	F	*v* 2 27; 4 3 *v*	9.3	
" 23	9333.3	12	F	*v* 0.5 27; 1 2 *v*	9.7	
Nov. 6	9347.3	12	F	*v* 4 2	9.9	moon
" 13	9354.3	12	F	2 2 *v*; e 4 *v*	10.5	
1912						
May 4	9527.4	12	F	1 2 *v*; *v* 4 2	9.8	
June 8	9562.4	12	F	*v* = g	12.2	
Oct. 8	9684.4	12	F	*v* 3 27; *v* 2 1; 4 6 *v*	9.4	
" 14	9690.3	12	F	*v* 3 27; *v* 2 1; 4 6 *v*	9.4	

The observation for Aug. 4, 1910, was made at the Swasey Observatory, Denison University, Granville, Ohio.

U BOOTIS 144918 II

1855.0; α $14^h\ 47^m\ 37^s$; δ +18° 17′.1.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes. *Annals*, vol. 57, p. 245. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
May 19	7350.4	5	W	*v* 4 7; 5 1 *v*	10.2	
" 29	7360.4	5	W	*v* = 7	10.6	
June 14	7376.4	5	W	5 2 *v*; *v* 1 7; *v* = 7	10.5	
" 24	7386.4	5	W	7 3 *v*	10.9	hazy

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 24	8421.4	5	W	*v* = 17	12.4	
May 11	8438.4	5	W	13 2 *v*; *v* 3 15; *v* 2 17	12.0	
" 25	8452.4	12	F	9 3 *v*; *v* 3.5 13; 10 1 *v*	11.4	
June 11	8469.4	12	F	*v* 4 13; 9 3 *v*	11.4	
" 24	8482.4	12	F	*v* 3.5 9; 7 2 *v*	10.8	
1911						
Apr. 18	9145.4	5	S	7 2 *v*; *v* 1 9	10.9	

RT BOOTIS 151336

1855.0; α 15^h 11^m 37^s; δ +36° 53′.6.

Comparison stars; a *Durchmusterung* chart was used with additional stars, the positions of which are given in the table below. The magnitudes were determined by comparison and direct estimation. No Harvard stars of suitable magnitude for use as a basis of comparison were found near by. Therefore the star B. D. 36° 2590, was used, but the magnitude 8.6 was assigned to it instead of 9.0. This gave excellent agreement in the lower end of the scale with the magnitudes as found by direct estimation.

Des.	Mag.	α 1900			δ 1900		B. D.		*Lund A. G.*
b	8.6	15^h	14^m	55^s	+36°	48′.7	36°	2590	6375
1	9.6		13	54		56.5			
a	9.8		12	56		32.5	36	2589	
3	10.6		14	26		41.2			
5	11.0		13	45		31.4			
4	11.4		14	4		48.1			
6	12.0		13	22		30.8			
10	12.9		13	1		39.9			
7	13.1		11	10		38.1			

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
May 28	8090.4	5	W	b 1 *v*	8.7	
1909						
Mar. 23	8389.4	5	W	a 3 *v*; *v* 12 3	9.8	
Apr. 9	8406.4	5	W	a 5 *v*; *v* 6 3	10.2	
" 16	8413.4	12	F	*v* = 3; *v* 2 3	10.5	
" 23	8420.4	12	F	3 8 *v*; *v* = 4	11.4	
May 8	8435.4	12	F	*v* 2 6; 4 4 *v*	11.8	
" 11	8438.4	12	F	*v* 3.5 6; 5 4 *v*; 4 8 *v*	11.8	
" 18	8445.4	12	F	6 2.5 *v*; *v* 7 10	12.2	
" 25	8452.4	12	F	6 3 *v*; *v* 7 10	12.2	
June 11	8469.4	12	F	10 2 *v*; *v* = 7	13.1	
" 24	8482.4	12	F	10 6 *v*; 7 2 *v*	13.4	all ft., m.

Date	J. D. —	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Sept. 18	8568.4	12	F	a 7 *v*; *v* 3.5 3	10.4	
Oct. 12	8592.4	12	F	a 2 *v*; 1 = *v*	9.8	
Nov. 3	8614.2	12	F	*v* 3.5 3; a 3 *v*	10.2	
1910						
Aug. 4	8888.4	9	F	*v* = b	8.6	
Sept. 29	8944.3	12	F	3 6 *v* 6 4	11.0	
Oct. 11	8956.4	12	F	*v* = 4; 5 3 *v*	11.4	faint, moon
" 26	8971.3	12	F	5 4 *v* 4 6	11.5	
1911						
Apr. 29	9156.4	12	F	*v* 6 a; *v* 5 1; b 4 *v*	9.1	
May 18	9175.4	12	F	*v* 3 a; b 3 *v*	9.2	
" 30	9187.4	12	F	*v* 1.5 a; 1 5 *v*	9.9	thin clouds
Oct. 13	9323.3	12	F	10 2 *v*	13.1	*v* faint
" 23	9333.3	12	F	4 8 *v*; 10 2 *v*; 10 1.5 *v*	12.8	
Nov. 13	9354.3	12	F	5 2 *v*; *v* 2 4	11.2	
1912						
May 4	9527.4	12	F	4 2 mg. *v* ?	13.4 ?	
June 13	9566.4	12	F	10 3 *v*	13.2	
Oct. 14	9690.3	12	F	b 2 *v*	8.8	
" 16	9692.3	12	F	b 4 *v*; *v* 8 1	8.9	

The observation for Aug. 4, 1910, was made at Swasey Observatory, Denison University, Granville, Ohio.

S SERPENTIS 151714 II

1855.0; α $15^h\ 14^m\ 52^s$; δ $+14°\ 50'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
June 12	7739.4	5	W	*v* = 8; 8 2 *v*	11.0	
July 15	7772.4	3	W	2 4 *v*; *v* = 3	8.8	
Aug. 4	7792.4	3	W	*v* = 2	8.3	
" 12	7800.4	3	W	*v* = 3; 1 6 *v*	8.6	
" 28	7816.4	3	W	2 2 *v*; *v* 2 3	8.6	
Sept. 30	7849.4	3	W	*v* = 4	9.5	low
1909						
Aug. 8	8527.4	3	W	1 4 *v*; *v* 2 2	8.0	
" 21	8540.4	3	W	*v* 2 2; 1 4 *v*	8.0	
Sept. 5	8555.4	3	W	*v* 4 3; 2 4 *v*	8.6	
" 28	8578.4	12	F	*v* 2 5; *v* = 4	9.7	full moon
Oct. 6	8586.3	12	F	*v* 2 9; 5 2 *v*	10.6	
" 16	8596.3	12	F	*v* = 9; *v* 5 10; 5 7 *v*	11.0	
" 29	8609.2	12	F	*v* = 7	10.8	low, moon
Nov. 3	8614.2	12	F	9 3.5 *v*; *v* 2.5 11	11.4	low, clear

S CORONAE 151731 III

1855.0; α 15^h 15^m 29^s; δ +31° 53′.5.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199.

Date	J. D.	Inst	Obs.	Comparisons	Adopted value	Remarks
1902	241					
June 4	5905.4	5	W	*v* = 5; *v* 1 5	8.4	
" 28	5929.4	5	W	*v* 4 7; 5 5 *v*	8.8	
July 23	5954.4	5	W	*v* 3 10; 9 4 *v*	10.0	
1906						
April 24	7325.4	5	W	*v* 5 5; *v* 1 4; 2 12 *v*	8.0	
1909						
Aug. 10	8529.4	3	W	*v* = 14	11.7	
" 21	8540.4	3	W	doubtful if seen; 11 seen	<11.1	low
Sept. 17	8567.4	5	W	*v* not seen; 18 seen	<12.3	
" 28	8578.4	12	F	*v* not seen; 11 and 12 seen	<11.3	low
Oct. 12	8592.3	12	F	*v*, barely seen, = 29	13.4	low
Nov. 3	8614.3	12	F	*v* = 29, very faint	13.4	
1911						
Oct. 13	9323.3	12	F	20 4 *v*; 21 2 *v*	12.9	
Nov. 13	9354.3	12	F	14 2 *v*; *v* 2 18	12.0	misty, low

S URSAE MINORIS 153378 IV

1855.0; α 15^h 35^m 19^s; δ +79° 7′.2.

Comparison stars; Hagen numbers and magnitudes used. One additional bright star was used, B. D. 77° 593, and its magnitude found to be 8.0, by comparison with other stars.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Nov. 28	6813.3	—	W	*v* 3 7; *v* = 77,593	8.0	
Dec. 8	6823.3	—	W	*v* 5 7; *v* 0.5 77,593	7.9	
" 18	6833.4	—	W	77,593 2 *v*	8.2	
1905						
Jan. 31	6877.4	12	W	12 3 *v*; 12 = *v*	9.0	
" 31	6877.4	12	W	phot. comp. with 12	9.1	
Feb. 11	6888.3	12	W	*v* = 19; 12 6 *v*	9.5	
" 27	6904.4	—	W	*v* 6 30; 12 10 *v*; *v* 4 25	10.2	
1906						
Oct. 16	7500.4	3	W	*v* 3 6; 5 5 *v*	8.4	
1907						
Aug. 15	7803.4	3	W	*v* = 7	8.4	
" 22	7810.4	3	W	*v* 1 7	8.3	full moon
Sept. 26	7845.4	5	W	20 2 *v*	9.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 28	8425.4	5	W	*v* 3 7; 3 5 *v*	8.2	
May 11	8438.4	5	W	*v* 1 7	8.3	
1912						
Feb. 13	9446.4	12	F	19 3 *v*; *v* 1 20	9.6	
Mar. 13	9475.4	12	F	*v* 1 25; *v* 2 25	10.4	

Y CORONAE 154338

1855.0; α $15^h 41^m 25^s$; δ $+38° 42'.4$.

Comparison stars; a *Durchmusterung* chart was used, with one additional faint star. The magnitudes were obtained from estimations based on B. D. 39° 2902, 9.5 mg., 39° 2908, 9.0 mg., and 39° 2920, 9.8 mg., the magnitudes being taken from *Annals*, vol. 70. The positions and magnitudes of the comparison stars are given in the following table.

Star *c* is *Lund A. G.* 6525.

Des.	Mag.	α 1900	δ 1900	B. D.
c	9.7	15^h 42^m 53^s	+38° 26′.1	38° 2696
f	10.6	44 25	24.5	38 2700
x	10.9	42 3	37.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
May 31	7727.4	5	W	*v* = f; *v* 1 x	10.7	
June 8	7735.4	5	W	*v* 3 x; *v* 2 f	10.5	
July 12	7769.4	3	W	*v* 6 x; c 3 *v*	10.2	
" 15	7772.4	3	W	*v* 2 x; c 10 *v*	10.7	
" 29	7786.4	3	W	c 3 *v*; *v* 10 x	10.0	
" 30	7787.4	3	W	c 4 *v*; *v* 3 f; *v* 9 x	10.1	
" 31	7788.4	3	W	c 3 *v*; *v* 4 f; *v* 10 x	10.0	
Aug. 8	7796.4	3	W	*v* = c; *v* 10 x	9.8	
" 12	7800.4	3	W	c 5 *v*; *v* 7 x	10.2	
" 14	7802.4	3	W	*v* = f	10.6	
" 26	7814.4	3	W	*v* 2 f	10.4	
" 28	7816.4	3	W	*v* 3 f; c 5 *v*	10.2	
Sept. 25	7844.4	5	W	*v* = x; *v* = f	10.8	
1908						
May 25	8087.4	5	W	c 4 *v*; *v* 3 f	10.2	
" 27	8089.4	5	W	*v* 4 f	10.2	
" 28	8090.4	5	W	*v* 4 f; c 6 *v*	10.2	
June 1	8094.4	5	W	*v* 5 f; c 7 *v*	10.2	
1912						
May 26	9549.4	5	F	f 2 *v*; *v* 2 x	10.8	faint, poor
June 1	9555.4	12	F	f 1 *v*; *v* 2 x	10.7	*v* reddish

R CORONAE 154428 III

1855.0; α $15^{h}\,32^{m}\,36^{s}$; δ $+28^{\circ}\,36'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 199. *o* Coronae is 5.6 mg. [*Annals*, vol. 50].

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
May 9	6975.4	12	W	24 2 *v*; *v* 2 31	12.8	
Sept. 28	7117.4	12	W	*v* 6 1	6.7	
1910						
Oct. 21	8966.4	12	F	16 = *v*	11.1	
" 26	8971.3	12	F	20 2 *v*; *v* 5 22	11.8	
" 31	8976.3	12	F	20 2 *v*; *v* 4 22	11.8	
Nov. 15	8991.4	12	F	*v* = 16; *v* 4 20	11.2	
Dec. 2	9008.2	12	F	*v* 2 14; 5 6 *v*; 8 3 *v*	10.5	
1911						
Apr. 15	9142.5	12	F	1 2 *v*	7.5	
" 26	9153.4	5	S	*v* = 1	7.3	
May 18	9175.4	5	S	*v* 6 1	6.7	
Oct. 13	9323.3	12	F	2 4 *v*; *v* 2 4	8.6	
" 23	9333.3	12	F	*v* 2 4; 2 3 *v*	8.6	
" 25	9335.3	12	F	2 4 *v*; *v* 2 4	8.6	
Nov. 22	9363.3	12	F	1 6 *v*; *v* 4 2	7.9	
1912						
Apr. 16	9509.4	5	S	*v* = 1	7.3	
" 20	9513.4	5	S	1 2 *v*	7.5	
" 30	9523.4	5	S	4 1 *v*	8.9	moon
May 11	9534.4	5	S	1 3 *v*; *v* 8 2	7.6	
" 31	9554.4	5	S	*v* = 1	7.3	
June 3	9557.4	5	S	1 2 *v*	7.5	

X CORONAE 154536

1855.0; α $15^{h}\,43^{m}\,30^{s}$; δ $+36^{\circ}\,43'$

Comparison stars; magnitudes taken directly from Harvard photograph. Star k is B. D. 36° 2650, mag. 10.0, obtained by comparison with Harvard stars.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Apr. 24	8421.4	5	W	*v* 8 9.5; *v* 2 8.9	8.7	
May 8	8435.4	5	W	*v* 4 9.5; 8.9 4 *v*	9.2	
" 23	8450.4	5	W	9.5 5 *v*; *v* 2 9.9	9.8	
" 29	8456.4	5	W	9.5 8 *v*; 9.9 3 *v*	10.2	
June 11	8469.4	5	W	10.8 5 *v*; *v* 3 11.7	11.4	
" 19	8477.4	5	W	10.8 4 *v*; *v* 5 11.7	11.2	
1911						
Apr. 15	9142.5	12	F	*v* 2 9.5	9.3	
" 29	9156.4	12	F	*v* 4 k	9.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
May 18	9175.4	12	F	*v* 4 10.8	10.4	
" 30	9187.4	12	F	10.8 2 *v*	11.0	
Oct. 13	9323.4	12	F	9.5 4.5 *v*; *v* 8 10.8	10.0	
Nov. 22	9363.3	12	F	8.9 4 *v*; *v* 2 9.5	9.3	
Dec. 7	9378.3	12	F	*v* 2 8.9; *v* 6 9.5	8.8	low
1912						
June 1	9555.4	12	F	k 4 *v*; *v* 4 10.8	10.4	

V CORONAE 154639 III

1855.0; α $15^h\ 44^m\ 21^s$; δ $+40°\ 0'.7$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 247. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
June 4	5905.4	5	W	*v* = 9; *v* 1 9	9.8	
" 28	5929.4	5	W	6 2 *v*; *v* 3 11	9.8	
July 23	5954.4	5	W	9 2 *v*; *v* = 10	10.1	
1903						
Sept. 24	6382.4	12	W	9 3.5 *v*; *v* 5 14	10.4	
1907						
July 15	7772.4	3	W	*v* 3 15; 9 8 *v*	10.9	
" 29	7786.4	3	W	*v* 4 14; *v* 2 13; *v* 9 15	10.6	
Aug. 12	7800.4	3	W	9 7 *v*; 12 1 *v*	10.6	
" 28	7816.4	3	W	15 1 *v*	11.5	good seeing
Sept. 25	7844.4	5	W	*v* = 19	11.8	
1908						
May 25	8087.4	5	W	*v* 3 9; *v* 1 6	9.4	
1909						
Aug. 8	8527.4	3	W	9 3 *v*; *v* = 10	10.2	
" 22	8541.4	3	W	*v* = 17	11.6	on limit
Sept. 17	8567.4	5	W	17 1 *v*	11.7	
" 28	8578.4	12	F	*v* = 17	11.6	faint, low
Oct. 12	8592.3	12	F	*v* = 24; 23 1.5 *v*	12.4	low
Nov. 3	8614.3	12	F	16 1 *v*; *v* = 17	11.6	low
" 29	8640.2	12	F	*v* 0.5 14; *v* 2.5 16	11.2	
Dec. 6	8647.2	12	F	*v* = 11	10.4	
1910						
Sept. 29	8944.3	12	F	*v* = 19	11.8	
Oct. 11	8956.3	12	F	*v* = 19	11.8	
" 26	8971.3	12	F	18 2 *v*; *v* 1 19	11.8	
Dec. 3	9009.2	12	F	14 8 *v*; *v* 4 19	11.6	
1911						
Apr. 29	9156.4	12	F	*v* = 9	9.9	
May 18	9175.4	12	F	9 4 *v*; *v* = 11	10.4	
" 30	9187.4	12	F	10 1 *v*; *v* 2 11	10.2	
Oct. 13	9323.4	12	F	16 1 *v*; *v* 1 17	11.6	
Nov. 13	9354.3	12	F	14 3 *v*; *v* 2 17	11.4	

R SERPENTIS 154615 II

1855.0; α $15^h 44^m 1^s$; δ $+15° 34'.6$.

Comparison stars; Hagen numbers used, magnitudes obtained from curve based on Hagen grades and Haravrd magnitudes, *Annals*, vol. 57, p. 247. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
May 21	7352.4	5	W	5 3 *v*; *v* 4 7	8.8	
June 14	7376.4	5	W	*v* 2.5 3	7.2	
July 14	7406.4	3	W	*v* 4 3; *v* = 2	7.0	
Aug. 14	7437.4	3	W	3 2 *v*; *v* = 3	7.6	
Sept. 1	7455.4	3	W	*v* 4 5; 3 10 *v*	8.2	
1907						
June 12	7739.4	5	W	*v* 3 3; *v* = 2	7.0	
July 15	7772.4	3	W	*v* 2 3; 2 4 *v*	7.3	
" 31	7788.4	3	W	*v* = 3	7.5	hazy
Aug. 12	7800.4	3	W	*v* = 5	8.4	
" 19	7807.4	3	W	*v* 3 5; 4 9 *v*	8.2	hazy
Sept. 26	7845.4	5	W	7 1 *v*; *v* 5 10	9.6	
1909						
July 4	8492.4	5	W	*v* 5 5; 3 8 *v*	8.1	
" 17	8505.4	3	W	5 2 *v*; *v* 3 7	8.8	
Aug. 2	8521.4	3	W	*v* = 7	9.2	
" 13	8532.4	3	W	7 2 *v*	9.4	
" 23	8542.4	3	W	*v* 3 10; both barely seen	10.2	hazy
Sept. 28	8578.4	12	F	*v* on limit; 17 2 *v*	11.7	full moon
Oct. 7	8587.4	12	F	19 2 *v*; *v* 3.5 23	12.6	faint, low
" 16	8596.3	12	F	20 4 *v*; *v* 4 22; *v* 1 21	12.4	
Nov. 3	8614.2	12	F	*v* = 22	12.6	l., clouds

Z CORONAE 155229

1855.0; α $15^h 50^m 24^s$; δ $+29° 40'$

Comparison stars; a *Durchmusterung* map was used with additional faint stars. Later this was compared with list of stars given in *Annals*, vol. 57, and identifications made. The Harvard letters are used for convenience and the Harvard magnitudes adopted. One star, z, was used in addition to the Harvard list, the position and magnitude of which are given below. There was some uncertainty in the identification of the star h of the Harvard list. The position of this agrees closely with that of B. D. 29° 2740, which was called B by the observer, but the magnitude of which does not agree with that of h. There is no star in position of h.

B: 11.0 mg. 1900; α $15^h\ 51^m\ 44^s$; δ +29° 28′.3; B. D. 29° 2740;
z: 11.7; 15 52 12 ; 29 39 .2.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
June 15	7742.4	5	W	*v* est. about 11 mg.	11.0±	
July 15	7772.4	3	W	*v* not seen; z faintest seen	<11.7	
Aug. 8	7796.4	3	W	*v* just seen, est. 11.0+; z seen	11.0+	
" 28	7816.4	3	W	*v* not seen; z faintest seen	<11.7	good seeing
Sept. 25	7844.4	5	W	*v* barely seen, est. 12.5	12.5	good seeing
1908						
Apr. 26	8058.4	5	W	*v* not seen; l faintest seen	<12.5	
May 27	8089.4	5	W	f 5 *v*; z 3 *v*	11.8	
1909						
Apr. 24	8421.4	5	W	B 4 *v*; *v* 2 k	11.4	
May 8	8435.4	5	W	*v* 2 B; e 1 *v*	10.8	
" 25	8452.4	5	W	*v* 2 B	10.8	hazy
June 14	8472.4	5	W	*v* = k	11.7	doubtful
" 29	8487.4	5	W	*v* not seen; f faintest seen	<11.1	moon
1912						
June 1	9555.4	12	F	*v* not seen; l faintest seen	<12.5	
" 5	9559.5	12	F	*v* not seen; l faintest seen	<12.5	fine seeing
Oct. 14	9690.3	12	F	*v* = e	10.6	

RR HERCULIS 160150 IV

1855.0; α $16^h\ 0^m\ 11^s$; δ +50° 54′.2.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
May 12	8439.4	5	W	*v* = 17	9.0	
" 29	8456.4	5	W	*v* 5 17; 6 5 *v*	8.4	light, hazy
June 11	8469.4	5	W	17 3 *v*; *v* 6 27	9.4	
" 28	8486.4	5	W	*v* 2 17; 10 2 *v*	8.8	
July 22	8510.4	3	W	*v* = 17	9.0	
" 19	8538.4	3	W	*v* 5 17; 9 5 *v*	8.6	
Sept. 3	8553.4	3	W	*v* 4 17; 10 1 *v*	8.6	
Oct. 5	8585.4	4	W	9 3 *v*; *v* = 10	8.5	
" 16	8596.4	5	W	*v* 5 17; 9 2 *v*	8.4	
" 25	8605.4	5	W	*v* 4 17; 9 4 *v*	8.6	moon

R HERCULIS 160118 II

1855.0; α $15^h\ 59^m\ 43^s$; δ +18° 45′.9.

Comparison stars; Hagen numbers used, magnitudes taken from Annals, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Apr. 30	7331.4	5	W	v not seen; 22 seen	<11.5	moon
May 21	7352.4	5	W	$v = 27$	12.2	
July 14	7406.4	3	W	v 1 7	9.3	
Aug. 14	7437.4	3	W	7 4 v	9.8	
Sept. 3	7457.4	3	W	v barely seen; $v = 13$	10.1	diff., moon

U SERPENTIS 160210 VI

1855.0; α $16^{h}\,0^{m}\,23^{s}$; δ $+10^{\circ}\,19'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H.P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
July 24	8512.4	3	W	$v = 15$	10.1	
Aug. 8	8527.4	3	W	$v = 6$	9.0	
" 21	8540.4	3	W	v 3 6; 4 10 v	8.6	
Sept. 28	8578.4	12	F	6 2 v; v 2 8	9.1	full moon
Oct. 7	8587.4	12	F	8 2 v; v 4 13; $v = 9$	9.5	
" 16	8596.3	12	F	9 3 v; v 5 17	9.8	
Nov. 6	8617.3	12	F	17 3 v; $v = 20$	11.0	faint, low

U HERCULIS 162119 II

1855.0; α $16^{h}\,19^{m}\,23^{s}$; δ $+19^{\circ}\,13'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200. Star no. 1 has magnitude 7.4 [*Annals*, vol. 24].

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
May 21	7352.4	5	W	v 2 2; 1 8 v	8.2	
June 25	7387.4	5	W	$v = 2$	8.3	
July 13	7405.4	3	W	v 2 4; 3 6 v	8.8	
Aug. 14	7437.4	3	W	5 5 v; v 2 8; $v = 8$	9.8	
Sept. 3	7457.4	3	W	v 3 10	10.2	
1907						
June 7	7734.4	5	W	2 2 v; v 3 5	8.8	
" 27	7754.4	5	W	v 2 2; 1 6 v	8.0	
July 15	7772.4	3	W	v 2 2; 1 6 v	8.0	
" 31	7788.4	3	W	2 1 v	8.4	
Aug. 12	7800.4	3	W	v 3 4; 2 5 v	8.7	
" 26	7814.4	3	W	v 2 4; 3 9 v	8.9	
Sept. 26	7845.4	5	W	5 5 v; v 5 10	9.9	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
July 22	8510.4	3	W	v not seen; <11	<10.9	
Aug. 21	8540.4	3	W	5 6 v; v 3 10	10.0	
Oct. 7	8587.4	12	F	v 5 5; v 1 2	8.5	
" 16	8596.3	12	F	v 4 5; 2 2 v	8.7	
Nov. 1	8612.2	12	F	v 2.5 5; 2 2.5 v	8.8	hazy, low
1911						
Nov. 13	9354.3	12	F	10 2 v; v 4 12	10.7	

SS HERCULIS 162807 VI

1855.0; α $16^h\ 25^m\ 52^s$; δ $+7°\ 10'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
May 25	8452.4	5	W	6 4 v; v 8 14	9.5	
June 14	8472.4	5	W	v = 24	11.5	
" 21	8479.4	5	W	v = 22; v = 24	11.4	hazy
July 4	8492.4	5	W	25 3 v; 24 5 v	11.9	barely seen
" 22	8510.4	3	W	doubtful if seen; <10	< 9.9	
Aug. 11	8530.4	3	W	v 4 20; v = 16	10.5	
Sept. 2	8552.4	3	W	5 1 v; v 3 6	8.7	
Oct. 7	8587.3	12	F	v 3.5 34; 27 6 v; v 0.5 32	12.6	
" 16	8596.3	12	F	34 2 v	13.4	fine seeing
1910						
Sept. 29	8944.3	12	F	20 4 v; v 2 24	11.3	
Oct. 11	8956.3	12	F	v 5 20; 6 5 v	10.0	
" 26	8971.3	12	F	8 1 v; v 2 11	9.8	
1911						
Apr. 29	9156.4	12	F	24 2 v; 25 1 v	11.7	
May 18	9175.4	12	F	v = 14	10.3	
" 30	9187.4	12	F	8 2 v; 6 4 v	9.6	

R URSAE MINORIS 163172 IV

1855.0; α $16^h\ 31^m\ 57^s$; δ $+72°\ 34'.4$.

Comparison stars; a *Durchmusterung* map was used. The three comparison stars were identified with those in *Annals*, vol. 37, p. 8, and the Harvard letters and magnitudes adopted.

c:	8.9 mg.,	B.D 73°	730;
d:	9.3 mg.,	72	736;
e:	9.6 mg.,	72	735.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Oct. 14	6402.3	12	W	*v* 1 d; c 2 *v*	9.2	
" 28	6416.4	12	W	d 3 *v*; *v* 1 e	9.6	
1904						
Jan. 11	6491.4	12	W	phot. comp. with e	9.4	
Mar. 29	6569.4	12	W	*v* = e	9.6	
" 29	6569.4	12	W	phot. comp. with d and e	9.6	

W HERCULIS 163137 III

1855; α $16^h\,30^m\,5^s$; δ $+37°\,38'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200. Star t has mg. 13.5, *Annals*, vol. 37, p. 170.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
May 25	6991.4	5	W	*v* not seen; 19 just seen	<11.1	hazy
June 25	7022.4	5	W	*v* = 19	11.1	
July 3	7030.4	5	W	*v* 5 18; 14 5 *v*	10.4	
" 26	7053.4	3	W	2 3 *v*; *v* 3 4; *v* = 3	8.5	
Aug. 5	7063.4	3	W	*v* = 2	8.4	
" 18	7076.4	3	W	*v* 0.5 2; *v* 3 4	8.3	
" 27	7085.4	3	W	*v* 2 2; 1 4 *v*	8.2	
" 31	7089.4	5	W	*v* 2 4; 2 2 *v*; 1 5 *v*	8.3	
Sept. 21	7110.4	5	W	*v* 4 9; *v* = 7	9.2	
Oct. 7	7126.4	5	W	*v* = 14	10.1	
" 28	7147.3	3	W	*v* and 16 barely seen	10.5 ±	low, misty
1906						
Apr. 25	7326.4	5	W	4 4 *v*; *v* 2 7	9.0	
May 21	7352.4	5	W	*v* = 4	8.6	
June 27	7389.4	5	W	9 4 *v*; *v* = 12	9.9	
July 14	7406.4	3	W	*v* barely seen; 9 seen	< 9.5	
Aug. 14	7437.4	3	W	*v* barely seen; 19 seen; est. 12.0	12.0 ±	
Sept. 1	7455.4	3	W	*v* barely seen; 15 seen	<10.2	moon
1909						
May 12	8439.4	5	W	9 5 *v*; *v* 7 18	10.0	
May 25	8452.4	5	W	*v* = 4	8.6	
June 14	8472.4	5	W	*v* 3 4; *v* = 2	8.4	
June 21	8479.4	5	W	2 3 *v*; *v* 1 4	8.6	
July 1	8489.4	5	W	2 2 *v*; *v* 5 7	8.6	
" 22	8510.4	3	W	*v* = 9	9.5	
Aug. 7	8526.4	3	W	*v* 2 19	10.9	
" 21	8540.4	3	W	19 5 *v*; *v* on limit	11.6	
Sept. 18	8568.4	5	W	*v* = 29	12.8	
Oct. 12	8592.4	12	F	32 3 *v*; *v* quite faint	13.6	low
Nov. 5	8616.3	12	F	t 4 *v*; 35 = *v*	13.8	
" 15	8626.3	12	F	t 2.5 *v*; *v* 2 35; *v* and 35 on limit	13.7	low
" 29	8640.2	12	F	32 2 *v*; *v* 4 36	13.4	
Dec. 6	8647.2	12	F	*v* 1.5 32; *v* 1 32; est. 13.5	13.3	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Nov. 6	9347.3	12	F	v = 8; v 2 9	9.4	moon
" 10	9351.3	12	F	8 2 v; v 2 9	9.4	misty
" 13	9354.3	12	F	8 = v; v 1 9	9.4	im. blurry
" 22	9363.3	12	F	v = 9	9.5	im. blurry
Dec. 6	9377.3	12	F	v not seen; 9 faintest seen	< 9.5	moon, low
" 7	9378.3	12	F	19 3 v; v 3 22	11.4	

R DRACONIS 163266 III

1855.0; α $16^h 32^m 17^s$; δ $+67° 3'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198. Star no. 1, B. D. 67° 942, for which no Hagen grade is given, has magnitude 6.66, *Annals*, vol. 54.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
July 2	5933.4	5	W	v = 20; 20 3.5 v; v 1 27	11.6	v just seen
Aug. 2	5964.4	5	W	v = 27	12.2	v glimpsed
1905						
May 24	6990.4	5	W	v 3 16; 12 5 v	9.9	
June 14	7011.4	5	W	4 3 v; v = 6	8.6	
" 25	7022.4	5	W	v 3 4; 2 5 v	8.0	
July 9	7036.4	3	W	v 8 4; 2 5 v	7 7	
" 18	7045.4	3	W	v 3 4	8.0	
" 27	7054.4	3	W	v = 4	8.3	
Aug. 5	7063.4	3	W	4 6 v; v = 5	8.6	
" 21	7079.4	3	W	v 2 9; v = 8	8.9	
Sept. 1	7090.4	3	W	12 2 v; v 6 16	9.6	
" 21	7110.4	5	W	18 4 v; v 6 19	10.6	
Oct. 6	7125.4	5	W	19 3 v; v 4 20	11.0	
1906						
Jan. 24	7235.4	12	W	12 1 v; v 6 16	9.6	
Apr. 27	7328.4	5	W	v = 12	9.4	
Aug. 12	7435.4	3	W	v not seen; 18 seen	<10.6	
Oct. 8	7492.4	5	W	4 4 v; v 5 9	8.6	
Nov. 6	7521.4	5	W	v 3 2; 1 6 v	7.2	
" 10	7525.4	5	W	v 4 4; 2 5 v	7.9	
Dec. 3	7548.4	5	W	v 1 4	8.2	
1907						
July 12	7769.4	3	W	v 2 4	8.1	
" 29	7786.4	3	W	v 3 4	8.0	
Aug. 9	7797.4	3	W	v 2 4	8.1	very hazy
" 19	7807.4	3	W	v 3 4; 2 5 v	8.0	hazy
Sept. 14	7833.4	3	W	v 1 9	9.0	hazy, moon
Oct. 5	7854.4	5	W	18 2 v; v 2 19	10.7	
" 22	7871.4	–	W	v barely seen; est. <11.0; 19 seen	<11.0	moon
" 30	7879.4	4	W	v just caught; 27 not held	<12.2	
Dec. 12	7922.4	5	W	v not seen; 18 seen	<10.6	moon, low

S HERCULIS 164715 II

1855.0; α $16^h\,45^m\,18^s$; δ $+15°\,11'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
June 4	5905.5	5	W	5 5 *v*; *v* 2 14	9.7	
Aug. 2	5964.4	5	W	*v* = 17	11.2	
1905						
May 24	6990.4	5	W	6 5 *v*; 7 3 *v*; *v* 5 9	9.3	
June 14	7011.4	5	W	5 2 *v*	8.5	
July 3	7030.4	3	W	5 2 *v*; *v* 5 7	8.4	
" 17	7044.4	3	W	*v* = 3	7.6	
" 26	7053.4	3	W	*v* 4 4; *v* = 3	7.6	
Aug. 5	7063.4	3	W	*v* 1 4	8.0	
" 18	7076.4	3	W	*v* 4 6; 5 3 *v*	8.5	
Sept. 1	7090.4	5	W	*v* = 6	8.8	
" 21	7110.4	5	W	*v* 1 10	10.2	
1906						
July 16	7408.4	3	W	*v* 5 10	9.8	
Aug. 15	7438.4	3	W	*v* not seen; 17 seen	<11.2	
1909						
May 24	8451.4	5	W	*v* 2 18; 10 7 *v*	11.1	
June 14	8472.4	5	W	*v* 3 9; 6 10 *v*	9.7	
" 24	8482.4	5	W	6 5 *v*; *v* 5 9	9.4	
July 21	8509.4	3	W	*v* = 6	8.8	
Aug. 8	8527.4	3	W	*v* 3 5; *v* = 4	8.1	
" 21	8540.4	3	W	*v* 3 5; *v* 2 4	7.9	
Oct. 7	8587.4	12	F	*v* = 6	8.8	
" 16	8596.3	12	F	6 2.5 *v*; *v* 10 8	9.0	
Nov. 1	8612.2	12	F	*v* 3 9; 7 2.5 *v*	9.4	hazy, low
" 15	8626.3	12	F	*v* = 10	10.3	low

RV HERCULIS 165631

1855.0; α $16^h\,55^m\,2^s$; δ $+31°\,26'.4$.

Comparison stars; Harvard letters, *Annals*, vol. 57, p. 251, were used. The magnitudes in this volume were compared with those of Parkhurst, *Researches in Stellar Photometry*, p. 88, Table 54, column II, and some differences were found. The Parkhurst values were adopted except for the fainter stars, which were found, by observation, to differ slightly. Their magnitudes were found by estimation based on Parkhurst p = Harvard k = 12.2 mg. The data for the stars used are given below, the positions being taken from Parkhurst's table or measured on the photograph.

Des.	Mg. P	Mg. F	α 1900	δ 1900	Parkhurst
h	11.5		16^h 56^m 55^s	+31° 26′.4	o
k	12.2		57 13	24.8	p
l		12.9	56 50	19.7	s
n		13.1	56 33	16.8	u
o		13.5	57 14	20.1	
p		13.5	56 54	25.2	α

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
May 30	9187.4	12	F	*v* not seen; l and n seen	<13.1	
Oct. 13	9323.4	12	F	h 2 *v*; *v* 3 k	11.8	
Nov. 4	9345.3	12	F	*v* not seen; k faintest seen	<12.2	full moon
" 6	9347.3	12	F	*v* not seen; l faintest seen	<12.9	
" 10	9351.3	12	F	o 3.5 *v*; *v* est. 14.2	14.0	*v* on limit
" 22	9363.3	12	F	*v* not seen; o faintest seen	<13.5	
1912						
May 17	9540.4	12	F	k 2 *v*; *v* 5 l	12.4	
June 3	9557.4	12	F	n 1 *v*; *v* 2 p	13.2	very clear

Z OPHIUCHI 171401 VI

1855.0; α 17^h 12^m 12^s; δ +1° 40′.3.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
July 1	8489.4	5	W	*v* 1 3	8.0	
" 19	8507.4	3	W	*v* 3 4; 3 3 *v*	8.4	
Aug. 6	8525.4	3	W	*v* 3 3; 2 8 *v*	7.8	
" 19	8538.4	3	W	3 1 *v*	8.2	
Sept. 3	8553.4	3	W	3 3 *v*	8.4	too hazy
Oct. 7	8587.4	12	F	*v* 7 5; 3 2 *v*	8.4	
" 15	8595.4	12	F	3 5 *v*; *v* 4 4	8.4	clouds
Nov. 6	8617.3	12	F	*v* between 4 and 5	9.0	

RS HERCULIS 171723 VI

1855.0; α 17^h 15^m 38^s; δ +23° 3′.9.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
May 12	8439.4	5	W	6 5 v; v 3 10	9.4	
" 29	8456.4	5	W	v not seen; 10 seen	$<$ 9.5	dew on glass
" 31	8458.4	12	W	19 2 v; $v = 20$	11.0	
June 11	8469.4	5	W	22 2 v; v 3 23	11.9	
1911						
Oct. 13	9323.4	12	F	10 2 v; v 2 13	9.7	
Nov. 4	9345.3	12	F	15 4 v; v 2 19	10.6	moon full
" 13	9354.3	12	F	19 3 v; v 4 20; 18 1 v	10.9	

T DRACONIS 175458 IV

1855.0; α $17^h\,54^m\,11^s$; δ $+58°\,14'.0$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Apr. 24	7325.4	5	W	35 3 v	11.1	
May 18	7349.4	5	W	$v = 35$	10.8	
June 24	7386.4	5	W	v 2 22	9.5	
Sept. 9	7463.4	5	W	22 3.5 v; v 1 35	10.4	
" 16	7470.4	5	W	22 3 v; v 2 35	10.3	
" 21	7475.4	5	W	22 4 v; v 2 35	10.4	
Oct. 8	7492.4	5	W	$v = 35$; 22 5 v	10.5	
" 16	7500.4	5	W	$v = 35$	10.8	
" 23	7507.4	—	W	$v = 35$	10.8	
Nov. 2	7517.4	12	W	v 4 35; 22 5 v	10.3	v very red
Dec. 3	7548.4	12	W	v 3 40	11.1	
1907						
June 8	7735.4	5	W	$v < 35$	$<$10.8	
Sept. 26	7845.4	5	W	22 2 v	9.9	

SX DRACONIS 180258

1855.0; α $18^h\,1^m\,44^s$; δ $+58°\,19'.6$.

Comparison stars; a *Durchmusterung* map was used with additional stars. This was later compared with a photograph kindly furnished by Prof. Pickering, and also with the Hagen map for T Draconis, which is very close to this star. As T Draconis is in Hagen series IV, the magnitudes there given are already reduced to the Harvard scale and hence could be used as standards. Those selected for that purpose were 2, 11, 19, 20, 31, 32, and 39, and the magnitudes of the other stars were found by comparison with these. The positions of the additional stars were measured micrometrically with the exception of n, which was taken from the photograph. Stars 3 and 17 are numbers 9620 and 9618 respectively in *A. G. Helsingfors Gotha.*

Des.	Mag.	α 1900			δ 1900	B. D.	Hagen
3	8.6	18^{h}	2^{m}	28^{s}	+58° 43′.0	58° 1783	11
6	9.0		4	44	39.8	1786	
17	9.2		2	25	19.7	1782	19
9	9.4	17	59	10	17.1	1777	
8	9.5		59	22	32.3	1778	
b	9.7	18	5	42	33.1		
32	10.5	17	55	16	34.2		32
e	10.8	18	5	16	29.8		
d	11.1		3	31	26.4		
m	11.5		3	4	26.8		
p	11.7		2	29	22.6		
n	12.0		3	13	22.9		

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241						
June 14	8472	——	5	W	17 5 *v*; 3 10 *v*	9.6	
“ 21	8479	——	5	W	17 6 *v*	9.8	
“ 29	8487	9^{h} 0^{m} ?	5	W	17 10 *v*; *v* = b	10.0	
Aug. 14	8533	10 0 ?	3	W	*v* barely seen, est. 10.5+	10.5+	
“ 19	8538	9 30 ?	3	W	*v* barely seen, est. 11.0+	11.0+	
Sept. 2	8552	——	3	W	*v* decidedly brighter than 11.0	>11.0	
“ 3	8553	——	3	W	17 10 *v*; *v* 1 b	9.9	
Oct. 8	8588	——	5	W	17 3 *v*	9.5	
“ 12	8592	——	5	S	17 1 *v*	9.3	
“ 16	8596	7 0	5	W	17 1 *v*	9.3	
“ 16	8596	10 3	5	W	17 2 *v*	9.4	
“ 17	8597	——	5	W	*v* = 17	9.2	
“ 18	8598	——	5	S	17 1.5 *v*	9.4	
“ 19	8599	——	5	W	17 1 *v*; 3 5 *v*; *v* 2 b	9.3	
“ 22	8602	——	5	W	*v* 9 d; *v* 1.5 b	9.9	
“ 25	8605	——	5	W	*v* = b	9.7	moon
“ 25	8605	7 45	5	S	3 6 *v*; *v* 1 b; 3 5 *v*	9.3	moon
“ 26	8606	——	5	W	*v* = b; 17 5 *v*	9.7	moon
“ 26	8606	——	5	S	6 3 *v*	9.3	moon
“ 29	8609	——	5	W	*v* = b; 17 5.5 *v*	9.7	full moon
“ 30	8610	——	5	W	*v* 2 b	9.5	
“ 31	8611	——	5	W	*v* 2 b; 17 3 *v*	9.5	
Nov. 1	8612	——	5	W	*v* = b	9.7	
“ 5	8616	——	5	W	*v* = b	9.7	
“ 6	8617	——	5	W	*v* 2 b	9.5	
“ 7	8618	——	5	W	*v* 3 b; 17 0.5 *v*	9.3	
“ 9	8620	7 30	5	W	*v* = b	9.7	
“ 12	8623	7 15	5	S	17 2 *v*; *v* = b	9.6	
“ 14	8625	——	5	W	17 1 *v*; *v* 3.5 b	9.3	
“ 15	8626	7 30	5	W	d 5 *v*; m 2.5 *v*	11.7	
“ 15	8626	11 0	12	W	d 5 *v*; m 1 *v*	11.6	
“ 17	8628	——	5	W	*v* = b; *v* 2 b	9.6	clouds
“ 18	8629	7 30	5	S	*v* = b	9.7	
“ 18	8629	——	5	W	*v* 1.5 17; *v* 3 17; *v* = 17; *v* = 17	9.1	
“ 25	8637	——	5	W	17 1.5 *v*	9.4	moon
“ 27	8638	——	5	W	17 2 *v*	9.4	full moon
“ 28	8639	——	5	W	*v* = b	9.7	
“ 29	8640	——	5	W	*v* 1 b; 17 1 *v*	9.4	

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241							
Nov. 30	8641	——		5	W	*v* 1.5 17; *v* 4 b	9.2	
Dec. 1	8642	——		4	W	17 1.5 *v*; *v* 2 b	9.4	
" 4	8645	——		5	W	17 3 *v*; *v* 2.5 b	9.5	
" 5	8646	——		5	W	17 3 *v*; *v* 2 b	9.5	
" 6	8647	——		5	W	*v* 1.5 b; 17 4 *v*	9.6	
" 8	8649	——		5	W	17 = *v*	9.2	hazy
" 8	8649	——		4	W	17 2 *v*; *v* 1 b	9.5	clearer
" 10	8651	——		5	W	*v* 2 17	9.0	
" 11	8652	7	0	12	F	d 2 *v*; *v* 1 m	11.4	
" 11	8652	10	20	12	F	*v* 4 d; b 4 *v*	10.4	
" 11	8652	11	0	12	F	b 2.5 *v*; *v* 7 d	10.2	
" 11	8652	11	35	12	F	*v* 2.5 b; 17 7 *v*	9.7	very low
" 11	8652	11	40	12	F	17 7 *v*	9.9	
" 16	8657	8	10	12	W	m 4 *v*; *v* = n	12.0	
" 16	8657	8	40	12	W	*v* 2 n	11.8	
" 16	8657	9	50	12	F	*v* 0.5 m	11.4	poor, low
" 16	8657	10	40	12	F	m 0.5 *v*	11.6	
" 16	8657	11	10	12	F	*v* 1 m	11.4	difficult
" 16	8657	11	10	12	W	*v* 5 n; m 2 *v*; p 1 *v*	11.7	
" 16	8657	11	30	12	W	*v* = p; m 1 *v*	11.6	too low
" 16	8657	11	45	12	F	*v* 1 m	11.4	
" 19	8660	——		5	W	*v* 2 b	9.5	
" 19	8660	——		12	F	*v* 3 b; 9 1 *v*; 17 3 *v*	9.5	
" 21	8662	7	40	12	F	b 3 *v*	10.0	
" 21	8662	8	5	12	W	*v* 6 d	10.5	
" 21	8662	8	15	12	F	*v* 2 e; *v* 6 d; 32 1.5 *v*; est. 10.6	10.6	
" 21	8662	8	37	12	W	*v* 3.5 d	10.8	
" 21	8662	9	0	12	F	*v* 2 d	10.9	
" 21	8662	9	48	12	W	d 2 *v*	11.3	clouds
1910								
Jan. 11	8683	6	30	12	F	*v* 3 n; *v* 1 m; d 3 *v*; *v* 1 p	11.5	
" 11	8683	7	0	12	F	m 1 *v*; *v* 2 n; *v* = p	11.7	
" 11	8683	7	5	12	W	m 3 *v*; *v* 2 n; m 4 *v*; *v* 1 n	11.8	poor images
" 11	8683	7	45	12	W	*v* 0.5 m; *v* 3.5 n	11.6	poor images
" 11	8683	7	55	12	W	m 1.5 *v*; *v* 3.5 n	11.6	poor images
" 11	8683	8	35	12	W	*v* = m; d 5.5 *v*	11.6	poor images
" 11	8683	9	0	12	W	d 1.5 *v*; d 2 *v*; *v* 3 m	11.2	poor images
" 11	8683	9	35	12	W	*v* = d	11.1	very misty
" 11	8683	9	40	12	F	*v* 1 d	11.0	
" 11	8683	10	27	12	F	*v* seems > d	>11.1	l., poor im.
" 16	8688	6	40	12	F	*v* 1.5 m; d 3.5 *v*	11.4	m., poor im.
" 16	8688	7	5	12	F	m 0.5 *v*; *v* 4 n	11.6	m., poor im.
" 16	8688	7	30	12	F	m 0.5 *v*; *v* 3.5 n	11.6	m., poor im.
" 16	8688	8	0	12	F	m 2 *v*; *v* 2.5 n	11.7	m., poor im.

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241							
Jan. 16	8688	8	30	12	F	m 2 *v*; *v* 2.5 n	11.7	m., poor im.
Apr. 2	8764	9	0	12	F	17 2 *v*; *v* 2 b; 6 2 *v*; *v* = 8	9.4	
" 9	8771	9	15	12	F	*v* 5 d; *v* 4 e	10.5	
" 9	8771	9	50	12	F	17 3 *v* 6 d	9.8	
" 9	8771	10	0	12	F	b 1.5 *v*; *v* 8 d; 17 7 *v*; *v* = b	9.9	
" 9	8771	10	42	12	F	*v* 1 b; 17 7 *v*	9.8	
" 30	8792	11	0	12	F	b 2 *v*; *v* 7 d	10.2	
Sept. 29	8944	7	30	12	F	17 4 *v*	9.6	
Oct. 3	8948	——		12	F	*v* = b	9.7	
" 4	8949	——		12	F	b 2 *v*	9.9	
" 5	8950	——		12	F	*v* = b	9.7	
" 6	8951	7	30	12	F	*v* = b	9.7	
" 6	8951	9	30	12	F	*v* = b	9.7	
" 11	8956	7	20	12	F	b 2 *v*	9.9	
" 11	8956	8	50	12	F	*v* = b	9.7	
" 12	8957	7	35	12	F	d 2 *v* 2 m	11.3	
" 12	8957	8	30	12	F	*v* 2 d; *v* 2 e	10.8	
" 12	8957	9	30	12	F	*v* 7 d; b 4 *v*	10.2	
" 26	8971	8	30	12	F	17 4 *v*	9.6	
" 28	8973	6	45	12	F	17 6 *v*	9.8	
" 29	8974	10	0	12	F	*v* = b	9.7	
" 31	8976	6	45	12	F	*v* = b	9.7	
" 31	8976	8	30	12	F	*v* = b	9.7	
Nov. 7	8983	9	30	12	F	*v* = b	9.7	
" 8	8984	8	0	12	F	*v* = b	9.7	
" 11	8987	7	15	12	F	*v* 2 b	9.5	
" 11	8987	9	30	12	F	*v* 2 b	9.5	
" 15	8991	6	30	12	F	*v* 2 b	9.5	
" 17	8993	8	0	12	F	*v* = p; m 2 *v*	11.7	moon
" 17	8993	8	20	12	F	*v* = p; m 2 *v*	11.7	
" 17	8993	10	0	12	F	*v* not seen; e faintest seen	<10.8	
" 27	9003	7	45	12	F	*v* = b	9.7	
" 27	9003	8	30	12	F	*v* = b	9.7	
" 27	9003	9	0	12	F	b 0.5 *v*	9.8	
" 27	9003	9	30	12	F	b 1.5 *v*	9.8	
" 27	9003	10	20	12	F	b 2 *v*	9.9	
" 27	9003	10	50	12	F	b 4 *v*	10.1	
" 27	9003	11	10	12	F	b 6 *v*; *v* 4 d	10.5	
1911								
Jan. 18	9055	8	37	12	F	m 3 *v*; *v* 3 n; *v* 1.5 p	11.7	
" 18	9055	9	2	12	F	m 4 *v*; p 1 *v*; *v* 1 n	11.9	
" 18	9055	9	20	12	F	*v* < m; *v* about = p	11.7	difficult
" 23	9060	6	10	12	F	*v* = b	9.7	
" 23	9060	6	50	12	F	b 1.5 *v*	9.8	
" 23	9060	7	25	12	F	b 3.5 *v*; *v* 4.5 e	10.2	
" 23	9060	7	50	12	F	*v* 4 d; *v* 8 m	10.7	
" 23	9060	8	20	12	F	*v* 1.5 d	11.0	
" 23	9060	8	45	12	F	*v* = d; *v* 5 m	11.0	
" 23	9060	9	10	12	F	d 2 *v*; *v* 2 m	11.3	
" 23	9060	9	35	12	F	*v* about = m; poor images	11.5	l. transit
" 23	9060	10	11	12	F	m 2 *v*	11.7	
" 23	9060	10	30	12	F	m 2 *v*; *v* 2 p	11.6	
" 23	9060	10	47	12	F	m 4 *v*; *v* = p	11.8	

Date		J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1911		241							
Jan.	23	9060	11	9	12	F	v = p	11.7	
Feb.	23	9091	7	15	12	F	b 3 v 4 e	10.2	l., poor im.
"	23	9091	8	50	12	F	v 2 e; v 4 d	10.6	
"	23	9091	9	20	12	F	v = e; v 2 d	10.8	
"	23	9091	9	50	12	F	d 1 v; v 2 m	11.2	
"	23	9091	10	20	12	F	m 1 v; v 3 p	11.5	
"	23	9091	10	45	12	F	m 2 v; v 2 p	11.6	
Apr.	16	9143	7	55	12	F	p 1 v; m 4 v; v 4 n	11.8	
"	16	9143	8	15	12	F	p 2 v; v 4 n	11.8	
"	16	9143	8	35	12	F	p 2 v; v 4 n	11.8	
"	16	9143	8	52	12	F	p 2 v; v 4 n	11.8	
"	16	9143	9	14	12	F	v = p; m 2 v	11.7	
"	16	9143	9	30	12	F	m 2 v; v 2 p	11.6	
"	16	9143	9	45	12	F	m 1 v; v 3 p	11.5	
"	16	9143	10	2	12	F	v 1 m; d 2 v	11.4	
"	16	9143	10	25	12	F	d 2 v; v 1 m	11.4	
"	16	9143	10	40	12	F	d 2 v; v 2 m	11.3	
"	16	9143	10	56	12	F	d 1 v; v 2.5 m	11.2	
"	26	9153	8	0	12	F	b 4 v; v 8 d	10.2	
"	26	9153	8	20	12	F	b 5 v; v 7 d	10.3	
"	26	9153	8	32	12	F	b 6 v; v 4 d	10.5	
"	26	9153	8	47	12	F	v 3 d; v 1.5 e	10.7	
"	26	9153	9	8	12	F	v 1 e; v 2 d	10.8	
"	26	9153	9	22	12	F	v 1.5 d; v 5 m	11.0	
"	26	9153	9	40	12	F	v 1 d; v 3 m	11.1	
"	26	9153	10	0	12	F	v = d; v 2 m; v 4 p	11.2	
"	26	9153	10	26	12	F	v = d; v 2 m; v 4 p	11.2	
"	26	9153	10	47	12	F	d 1.5 v; v 2 m; v 3.5 p	11.3	
"	26	9153	11	15	12	F	d 2 v; v = m; v 3 p	11.4	
"	26	9153	11	31	12	F	d 3 v; m 1 v; v 2 p	11.5	
"	26	9153	11	47	12	F	m 2 v; v 2 p	11.6	
May	17	9174	10	5	12	F	m 1 v; v 2 p	11.6	
"	17	9174	10	30	12	F	v 1 m; d 3 v	11.4	
"	17	9174	10	55	12	F	d 2 v; v 2 m	11.3	
"	17	9174	11	20	12	F	v 1 d	11.0	
"	22	9179	8	53	12	F	p 1 v; v 1.5 n	11.8	
"	22	9179	9	20	12	F	v 1 p; v 2 n	11.7	
"	22	9179	9	40	12	F	m 2 v; v = p; v 3 n	11.7	
"	22	9179	10	5	12	F	m 2 v; v 1 p	11.6	
"	22	9179	10	25	12	F	m 2 v; v 1 p	11.6	
"	22	9179	10	40	12	F	m 2 v; v 2 p	11.6	
"	22	9179	11	0	12	F	m 2 v; v 2 p	11.6	
"	26	9183	8	52	12	F	v = b	9.7	
"	26	9183	9	20	12	F	b 0.5 v; v 6 d	10.1	
"	26	9183	9	50	12	F	v = b	9.7	
"	27	9184	8	40	12	F	v = b	9.7	
"	27	9184	9	10	12	F	b 2 v; v 6 d	10.2	
"	27	9184	9	30	12	F	b 4 v; v 4 d	10.4	
"	27	9184	9	55	12	F	v 2 d; v 4 m	11.0	
"	27	9184	10	35	12	F	v = d; v 2 m	11.2	
"	27	9184	11	5	12	F	d 2 v; v 2 m	11.3	
"	27	9184	11	35	12	F	d 3 v; v 1 m	11.4	
"	27	9184	11	55	12	F	m 1 v; v 1 p	11.6	
Oct.	24	9334	7	15	12	F	b 3 v 3 e; v 6 d	10.4	
"	24	9334	8	5	12	F	b 3 v 3 e; v 6 d	10.4	
"	24	9334	9	30	12	F	e 3 v 2 d	11.0	
"	24	9334	9	54	12	F	v 1 d; v 3 m	11.1	

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241						
Oct. 24	9334	10 18	12	F	d 1 *v*; *v* 2 m	11.2	
" 24	9334	10 40	12	F	d 2 *v*; *v* 1 m	11.4	
" 24	9334	11 5	12	F	m 1 *v* 1 p	11.6	
Dec. 20	9391	6 15	12	F	*v* 1 d; *v* 3 m	11.1	
" 20	9391	6 39	12	F	d 1 *v*; *v* 2 m	11.2	
" 20	9391	7 8	12	F	m 1 *v*; *v* 3 n	11.6	
" 20	9391	7 25	12	F	*v* = m; *v* 4 n	11.6	
" 20	9391	7 49	12	F	m 1 *v*; *v* 3 n	11.6	
" 20	9391	8 15	12	F	m 1 *v*; *v* 3 n	11.6	im. blurry
" 20	9391	8 50	12	F	m 1 *v*	11.6	
" 20	9391	9 15	12	F	m 1 *v*	11.6	poor
1912							
Jan. 20	9422	6 30	12	F	d 2 *v* 2 m	11.3	
" 20	9422	6 55	12	F	d 2 *v* 2 m	11.3	
" 20	9422	7 10	12	F	d 3 *v* 1 m; *v* 2.5 p	11.4	
" 20	9422	7 30	12	F	*v* = m	11.5	
" 20	9422	7 50	12	F	*v* = m	11.5	
" 20	9422	8 20	12	F	*v* = m	11.5	low moon
" 25	9427	7 5	12	F	b 2 *v*; *v* 6 e	10.0	
" 25	9427	7 32	12	F	*v* 2 b	9.5	im. steadier
" 25	9427	7 42	12	F	*v* = b	9.7	
" 25	9427	8 5	12	F	b 2 *v*; *v* 6 e	10.0	
" 25	9427	8 42	12	F	b 6 *v*; *v* 6 d	10.4	
Mar. 17	9479	7 30	12	F	*v* not seen; d seen faintly	<11.1	low, poor
" 22	9484	7 55	12	F	d 4 *v*; *v* 2 p	11.5	
" 22	9484	8 40	12	F	m 2 *v*; *v* 1 p; *v* 3 n; d 6 *v*	11.7	
" 22	9484	9 20	12	F	m 4 *v*; *v* 2 n	11.8	
" 22	9484	9 38	12	F	m 3 *v*; *v* 2 n	11.8	
" 22	9484	10 15	12	F	m 3 *v*; *v* 2 n	11.8	
" 22	9484	10 58	12	F	m 3 *v*; *v* = p; *v* 3 n	11.7	
" 22	9484	11 30	12	F	m 2 *v*; *v* 1 p; *v* 4 n	11.6	
" 22	9484	11 50	12	F	m 2 *v*; *v* 1 p; *v* 4 n	11.6	

Note.—This star 43 . 1909, B. D. 58° · 1785; was discovered independently by Prof. Whitney (*A. N.* 4371) while observing on 17 . 1909, B. D. 58° 1782, which was announced to be a variable by Wolf (*A. N.* 4324). Later it was found that Wolf had given the wrong number to his variable and that it was 58° 1785 and not 58° 1782 which varied (*A. N.* 4389).

T HERCULIS 180531 III

1855.0; α $18^h\,3^m\,37^s$; δ $+30°\,59'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200. Hagen star no. 54 is outside the limit of this table. By extrapolation its magnitude was found to be 13.4.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
June 5	5906.5	5	W	14 2 *v*; *v* 4 22	9.6	
“ 28	5929.4	5	W	7 2 *v*; *v* 5.5 14; *v* = 8	8.5	
July 10	5941.4	5	W	7 4.5 *v*; *v* 5 12	8.6	
1903						
Sept. 24	6382.4	12	W	45 5 *v*; *v* 5 54	13.0	
1905						
July 3	7030.4	3	W	*v* = 31	11.2	
“ 20	7047.4	3	W	*v* = 31	11.2	
“ 26	7053.4	3	W	*v* 2 31	11.0	
Aug. 5	7063.4	3	W	*v* 2 29	10.7	
“ 21	7079.4	3	W	*v* 4 14; *v* = 10	8.8	
“ 31	7089.4	5	W	6 1 *v*; 4 4 *v*	7.8	
Sept. 21	7110.4	5	W	6 3 *v*; *v* = 7	8.1	
Oct. 6	7125.4	5	W	8 1 *v*; *v* 3 10	8.6	
“ 28	7147.4	3	W	*v* 2 29; *v* = 22	10.4	misty
1906						
May 1	7332.4	5	W	*v* not seen; 45 glimpsed	<12.5	
Aug. 15	7438.4	3	W	4 3 *v*; *v* 1 6	7.6	
Sept. 1	7455.4	3	W	*v* = 8	8.6	
“ 16	7470.4	5	W	14 4 *v*; *v* 6 22	9.6	
1907						
June 7	7734.4	5	W	6 9 *v*	8.7	too hazy
“ 27	7754.4	5	W	4 7 *v*; *v* = 6	7.9	
Aug. 3	7791.4	3	W	*v* 8 14; 8 3 *v*	8.7	
“ 13	7801.4	3	W	*v* = 14	9.3	
“ 26	7814.4	3	W	*v* = 22	10.2	
Sept. 13	7832.4	5	W	34 3 *v*; *v* 5 45	12.0	
Oct. 12	7861.4	5	W	*v* barely seen; 45 seen	<12.5	good seeing
“ 30	7879.4	4	W	29 1 *v*	11.0	
1909						
May 25	8452.4	5	W	*v* 2 14; 11 4 *v*	9.2	
June 14	8472.4	5	W	*v* = 45	12.5	
1911						
Nov. 18	9359.4	5	S	*v* = 29; *v* 3 31	10.9	

X OPHIUCHI 183308 IV

1855.0; α $18^h\,31^m\,25^s$; δ $+8^\circ\,42'.6$.

Comparison stars; Hagen numbers and magnitudes used, with one additional star, a, which is B. D. 8° 3741, mg. 6.5, *Annals*, vol. 57, p. 255.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
June 12	7374.4	5	W	*v* 3 2	6.7	
Aug. 14	7437.4	3	W	*v* 3 2; a 5 *v*	6.8	
“ 22	7445.4	3	W	*v* 1 2	6.9	
Sept. 11	7465.4	5	W	*v* 1 3; *v* = 2	7.0	
1907						
June 12	7739.4	5	W	*v* 2 3; *v* 1 2	6.9	
Aug. 15	7803.4	3	W	3 4 *v*; *v* 2 5	7.6	
“ 26	7814.4	3	W	3 3 *v*; *v* 5 5	7.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Sept. 15	7834.4	5	W	5 4 *v*; *v* 3 8	8.5	moon
Oct. 12	7861.4	5	W	5 4 *v*; *v* 10 15	8.4	
1909						
Aug. 11	8530.4	3	W	*v* = 5	8.0	
" 23	8542.4	3	W	5 2 *v*; 3 10 *v*	8.2	
Sept. 14	8564.4	5	W	5 6 *v*; *v* 5 9	8.6	
Oct. 5	8585.4	4	W	5 3 *v*; *v* 5 9	8.4	
" 17	8597.4	5	W	5 8 *v*; *v* 2 9	8.8	
Nov. 1	8612.4	5	W	*v* 3 12; 5 8 *v*	8.9	

RS DRACONIS 184074

$1855.0; \quad \alpha \quad 18^h\,41^m\,25^s; \quad \delta \quad +74^\circ\,11'.4.$

Comparison stars; a *Durchmusterung* map was used with additional faint stars. The magnitudes were determined by comparisons with B. D. 74° 780, 9.6 mg. and 74° 782, 8.6 mg., *Annals*, vol. 70.

Des.	Mag.	α 1900			δ 1900		B. D.		*A G Berlin C*
c	8.3	18^h	41^m	16^s	+74°	31′.7	74°	789	2653
a	8.9		38	38		13.9	74	786	2646
d	9.1		36	39		39.2	74	784	2636
b	9.2		43	12		14.2	74	790	2656
n	9.5		40	42	73	41.7	73	833	2651
m	9.6		40	10	73	42.0	73	832	2649
g	9.8		47	11	74	15.4	74	791	2672
o	10.0		38	15		23.2			
y	10.4		41	38		20.6			
z	10.6		37	38		17.4			
x	11.1		40	31		15.9			

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
May 3	6969.4	5	W	*v* = z; *v* on limit	10.6	hazy
" 23	6989.4	12	W	*v* 4 z; *v* 8 x	10.2	
Aug. 5	7063.4	3	W	*v* 5 + z	>10.1	z diff., hazy
Sept. 23	7112.4	5	W	*v* 3 m; b 7 *v*	9.6	
Oct. 17	7136.4	5	W	a 4 *v*; b 3 *v*; *v* 2 n	9.4	
" 30	7149.4	5	W	a 5 *v*; *v* 2.5 m	9.4	
Nov. 25	7175.4	12	W	b 3 *v*; *v* 8 0	9.4	
Dec. 7	7187.4	5	W	*v* 3 g; d 5 *v*	9.6	moon, hazy
1906						
Jan. 27	7238.4	12	W	*v* = o; *v* 4 y	10.0	
Feb. 24	7266.4	12	W	*v* 3 x; y 2 *v*	10.7	
Mar. 17	7287.4	12	W	*v* = y; y 3 *v*	10.6	
" 22	7292.4	12	W	y 5 *v* 5 x	10.8	
" 22	7292.4	12	W	phot. comp. with o, y, z, and x	10.8	
May 19	7350.4	5	W	*v* 3 o; b 5 *v*	9.7	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Nov. 1	7516.4	12	W	v 3 y; o 2 v	10.2	
Dec. 11	7556.4	5	W	v = x	11.1	
1907						
Jan. 22	7598.4	12	W	y 5 v; v 5 x	10.8	
May 17	7713.4	12	W	phot. comp. with c, a, b, n, m, o, y, z, x	9.2	
1912						
May 23	9546.4	12	F	v = x	11.1	
June 1	9555.4	12	F	v = x	11.1	
Nov. 11	9718.4	12	F	a 2 v; v 1 b	9.1	

RY LYRAE 184134

1855; α $18^h 39^m 38^s$; δ $+34° 31'.4$.

Comparison stars; magnitudes taken directly from a Harvard photograph.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 7	8587.4	5	W	v = 10.3	10.3	
" 16	8596.4	5	W	v 3 10.3	10.0	
" 25	8605.4	5	W	v 5 10.3	9.8	moon
Nov. 6	8617.4	5	W	10.3 1 v; v = 10.4	10.4	
Dec. 6	8647.4	5	W	11.2 1 v	11.3	glass frosty
1911						
Oct. 16	9326.3	12	F	11.7 4 v; v 2 12.3	12.1	
Nov. 2	9343.3	12	F	12.8 2 v; v 3 13.3	13.0	good seeing
" 21	9362.4	12	F	13.3 4 v	13.7	very clear
Dec. 8	9379.3	12	F	v not seen; est. <13.8	<13.8	

R AQUILAE 190108 II

1855.0; α $18^h 59^m 23^s$; δ $+8° 0'.8$.

Comparison stars; Hagen numbers used, with one additional star, A, B. D. 8° 3956, mg. 7.55, *Annals*, vol. 54. The magnitudes were obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 256, with the exception of Hagen star no. 1, for which no grade is given. Star 1 = Harvard a, mg. 6.12, *Annals*, vol. 57, p. 256. The co-ordinates of the magnitude curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Aug. 11	8530.4	3	W	*v* = 1	6.1	
" 22	8541.4	3	W	*v* 1 1	6.0	
Sept. 17	8567.4	5	W	*v* 3 1	5.8	
Oct. 6	8586.4	5	W	1 6 *v*; *v* = A	7.2	
" 19	8599.4	5	W	1 8 *v*; *v* = A	7.2	
Nov. 1	8612.4	4	W	*v* 1 4	7.7	
" 29	8640.4	5	W	*v* = 8; *v* 3 7	8.6	

TY AQUILAE *191007 b*

1855.0; α $19^h\ 7^m\ 19^s$; δ $-7^\circ\ 15'.5$.

Comparison stars; on map with W Aquilae. The variable was used as a comparison star for W Aquilae before its variation was discovered.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 6	8586.31	12	F	W Aquilae (9.9) 3.5 *v*	10.2	
Nov. 6	8617.29	12	F	*v* < 10.6; W Aquilae (10.3) 2.5 *v*	10.6 ±	
" 15	8626.31	12	F	*v* = 10.6	10.6	
" 29	8640.25	12	F	W Aquilae (11.2) 1.5 *v*	11.4	
Dec. 5	8646.27	12	F	11.1 2.5 *v*	11.4	low, diff.
" 6	8647.23	12	F	11.1 2.5 *v*	11.4	
" 11	8652.28	12	F	*v* 2 W Aquilae (11.1)	10.9	low, poor
" 19	8660.4	12	F	*v* < 10.8	<10.8	poor
1910						
Sept. 29	8944.31	12	F	*v* 1 a; 10.8 2 *v*	11.0	
Oct. 11	8956.37	12	F	a 2 *v* 2 11.6	11.3	
" 21	8966.39	12	F	*v* = a	11.0	moon
" 26	8971.28	12	F	*v* = 10.8; *v* 2 a	10.8	
" 31	8976.28	12	F	*v* 1.5 a; 10.8 2 *v*	10.9	
Nov. 7	8983.35	12	F	a 2 *v*; W Aquilae (11.2) 2 *v*	11.3	
" 11	8987.31	12	F	10.8 2 *v* 2 11.1	11.0	moon
Dec. 2	9008.24	12	F	10.8 3 *v*; 11.1 1.5 *v*	11.2	
1911						
Oct. 12	9322.38	12	F	10.8 3 *v*; 11.1 1 *v*	11.2	moon, poor
" 23	9333.33	12	F	10.6 2 *v*; *v* 1 11.1; 10.8 1 *v*	10.9	
Nov. 10	9351.31	12	F	11.1 2 *v*; *v* 3 11.6; 11.1 0.5 *v*; *v* 4.5 11.6	11.2	
" 22	9363.27	12	F	*v* = 11.1; 10.8 2 *v*	11.0	
Dec. 7	9378.27	12	F	*v* = 10.8	10.8	moon, poor
" 13	9384.25	12	F	a 2 *v*; 11.1 1 *v*; *v* = 11.2	11.2	
1912						
Oct. 8	9684.36	12	F	11.1 2 *v*; a 1 *v*	11.2	
" 14	9690.35	12	F	a 2 *v*; *v* 4 11.6	11.2	
" 31	9707.34	12	F	*v* = 10.8	10.8	low, misty

Note.—This star, the elements of which are marked unknown in V. J. 1913, appears to be of short period and small range, approximating the δ Cephei type. The observations are unfortunately too scattered to be decisive.

W AQUILAE *191007*

1855.0; α $19^h 7^m 34^s$; δ $-7° 17'.6$.

Comparison stars; magnitudes taken directly from a Harvard photograph, and from *Annals*, vol. 57, p. 258, with one additional star, y, which has position α $19^h 9^m 53^s$, δ $-7° 19'.8$, and magnitude 11.0, from comparison with other stars.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 6	8586.3	12	F	9.9 1 v; v = 9.9; v 1 9.9	9.9	
" 15	8595.3	12	F	9.6 2 v; v 1 9.9	9.8	
Nov. 6	8617.3	12	F	9.9 2.5 v; v 2 10.6	10.3	
" 15	8626.3	12	F	v = 10.6; 9.9 5 v	10.5	
" 29	8640.2	12	F	11.1 3 v; v 4 11.6; a 1.5 v	11.2	
Dec. 5	8646.3	12	F	11.1 2.5 v	11.4	low, diff.
" 6	8647.2	12	F	11.1 2.5 v	11.4	
" 11	8652.3	12	F	10.8 3 v	11.1	faint, low
" 19	8660.4	12	F	v < 10.8	<10.8	poor
1910						
Sept. 29	8944.3	12	F	v 1 12.6; 12.3 2 v	12.5	very clear
Oct. 11	8956.4	12	F	11.6 4 v; v 2 12.3; 11.9 1.5 v	12.0	
" 21	8966.4	12	F	v 2 11.9; 11.6 2 v	11.8	
" 31	8976.3	12	F	v = 11.1; v 4 11.6	11.2	
Nov. 7	8983.4	12	F	11.1 2 v; v 4 11.6	11.2	
" 11	8987.3	12	F	v = 10.8	10.8	
Dec. 2	9008.2	12	F	v 2 9.6; 9.2 3 v	9.4	
1911						
Oct. 12	9322.4	12	F	12.6 3 v	12.9	poor
" 13	9323.3	12	F	13.0 2 v	13.2	
" 23	9333.3	12	F	12.6 2 v; v 2 13.0	12.8	
Nov. 22	9363.3	12	F	v = 13.0	13.0	
Dec. 13	9384.2	12	F	v not seen; 12.6 and 13.0 seen	<13.0	
1912						
Oct. 8	9684.4	12	F	v = 12.3	12.3	
" 14	9690.3	12	F	12.3 1 v; v 2 12.6	12.4	
" 31	9707.3	12	F	12.5 3 v; v 2 13.0	12.8	low, misty

U LYRAE 191637

1855.0; α $19^h 15^m 3^s$; δ $+37° 36'.6$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes were based upon B. D. 37° 3430, 8.5 mg., *Annals*, vol. 57, and B. D. 37° 3414, mg. 9.5, *Annals*, vol. 57. They are as follows:

A: 8.5 mg., B. D. 37° 3430;
k: 9.5 3414;
d: 10.0 3405;
n: 11.1 3418.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Oct. 12	7496.4	5	W	k 2 *v*	9.7	
Nov. 7	7522.4	5	W	k 3 *v*; *v* 10 n	10.0	
1912						
June 1	9555.4	12	F	n 6 *v*; *v* faint	11.7	rather red
Oct. 16	9692.3	12	F	A 4 *v*; *v* 6 k	8.9	*v* red
Nov. 5	9712.4	12	F	*v* = k	9.5	red
" 18	9725.4	12	F	k 3 *v* 8 n	9.9	moon
" 29	9736.3	12	F	k 3 *v* 6 n	10.0	
Dec. 12	9749.3	12	F	k 10 *v*; *v* 6 n	10.5	

T SAGITTAE 191717 IV

1855.0; α $19^h\,15^m\,14^s$; δ $+17°\,23'.6$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
June 25	7387.4	5	W	*v* = 19	9.8	
Aug. 17	7440.4	3	W	19 1 *v*; *v* 1 18	9.8	
Sept. 15	7469.4	5	W	*v* 2 15; *v* 2 14	8.9	
Oct. 8	7492.4	5	W	15 1 *v*	9.3	
Nov. 2	7517.4	12	W	*v* 4 15	8.8	
1909						
Aug. 13	8532.4	3	W	*v* = 16; 15 3 *v*	9.4	
" 25	8544.4	3	W	*v* 5 19; 15 3 *v*	9.4	
Oct. 5	8585.4	4	W	15 5 *v*; *v* = 19	9.8	
" 19	8599.4	5	W	*v* = 19	9.8	
Nov. 6	8617.4	5	W	15 4 *v*; *v* 2 19	9.6	
" 18	8629.4	4	W	*v* = 18	9.9	

R CYGNI 193449 III

1855.0; α $19^h\,32^m\,56^s$; δ $+49°\,52'.5$.

Comparison stars; Hagen numbers used. Magnitudes of no. 1, 4.6 mg. and no. 2, 6.6 mg., taken from *Annals,* vol. 50; remaining magnitudes from vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Aug. 2	5964.4	5	W	2 4 *v*; *v* 3 3	7.6	
1903						
Sept. 15	6373.4	5	W	*v* = 31; 14 3 *v*	10.6	
1904						
Oct. 15	6769.4	5	Wi	36 3 *v*	11.7	
" 27	6781.4	5	Wi	*v* 4 36; 14 3 *v*	10.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Nov. 7	6792.4	5	W	*v* 5 14; 8 2 *v*	9.5	
" 8	6793.3	5	W	*v* = 6	9.2	poor
" 11	6796.3	5	W	4 2 *v*; *v* 3 6	8.8	
" 18	6803.4	5	W	3 2 *v*	8.6	
" 19	6804.4	–	—	2 10 *v*; *v* 8 14	8.4	
" 26	6811.3	5	W	*v* 1.5 3; 2 8 *v*	8.0	
" 30	6815.4	–	—	*v* 8 14; 2 5 *v*	7.9	
Dec. 14	6829.4	–	—	2 4 *v*	7.4	
" 21	6836.4	–	—	*v* 4 3; 2 5 *v*	7.6	
1906						
Nov. 2	7517.4	12	W	*v* not seen; 59 seen	<12.5	
Dec. 1	7546.3	5	W	*v* barely seen; 48 seen	<11.9	full moon
1907						
Aug. 11	7799.3	3	W	*v* 2 14	9.7	
Sept. 13	7832.4	5	W	14 2 *v*	10.1	good
" 26	7845.4	5	W	14 3 *v*	10.2	
Oct. 2	7851.4	5	W	36 2 *v*; *v* 2 38	11.5	
" 8	7857.4	5	W	36 2 *v*	11.6	
" 14	7863.4	5	W	38 2 *v*; *v* 5 56	11.8	moon
" 24	7873.3	5	W	*v* = 51, est. 11.8	12.0	
1909						
July 17	8505.4	3	W	2 4 *v*; *v* 5 4	7.5	
Aug. 6	8525.4	3	W	*v* 3 2	6.0	
" 19	8538.4	3	W	*v* 1 2	6.4	
Sept. 18	8568.4	5	W	2 5 *v*; *v* 5 4	7.6	
Oct. 7	8587.4	5	W	*v* 2 4; *v* = 3	8.4	
" 19	8599.4	5	W	*v* 4 5; *v* = 4	8.6	
Nov. 5	8616.4	5	W	4 1 *v*	8.7	
Dec. 4	8645.4	5	W	*v* = 28	10.7	
1910						
Jan. 8	8680.4	5	W	32 2 *v*; *v* 3 36	11.2	
Oct. 26	8971.4	5	S	6 1 *v*; *v* 3 11	9.3	
Nov. 19	8995.4	5	S	4 3 *v*; *v* 1 5	8.9	
Dec. 8	9014.4	5	S	6 4 *v*; *v* 1 11	9.6	moon
1911						
Jan. 5	9042.4	5	S	*v* = 14	9.9	
Oct. 25	9335.4	5	S	*v* = 11; *v* 5 14	9.5	
Nov. 1	9342.4	5	S	2 3 *v*; *v* 3 6	7.9	
" 15	9356.4	5	S	*v* = 2; *v* 8 6	6.6	
" 22	9363.4	5	S	1 8 *v*; *v* 3 2	6.1	
Dec. 6	9377.4	5	S	2 1 *v*; *v* 8 6	6.9	
" 13	9384.4	5	S	2 2 *v*; *v* 8 6	7.1	
1912						
Jan. 19	9421.4	5	S	*v* = 4; *v* 3 5	8.6	low

RT CYGNI 194048 IV

1855.0; α $19^h\ 39^m\ 33^s$; δ $+48°\ 25'.5$.

Comparison stars; Hagen numbers and magnitudes used, with two additional stars, m and h; m = 48° 2918 = 7.2 mg. *Annals*, vol. 54; h = 48° 2932 = 9.2 mg., *Annals*, vol. 57, p. 260.

Date	J. D.	Inst	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Nov. 27	6081.4	5	W	*v* = 10	8.3	
1903						
Oct. 13	6401.4	5	W	*v* = 5	7.8	
" 28	6416.4	12	W	*v* 4 5; 4 3 *v*	7.6	
Dec. 5	6454.4	12	W	*v* = 14 + 0.6 mg. (phot.)	9.2	cloudy, poor
1904						
Oct. 1	6755.3	5	W	10 5 *v*; 11 2 *v*; *v* 4 h	8.7	
Nov. 7	6792.3	5	W	*v* 2 m	7.0	
" 8	6793.3	5	W	*v* 2 m	7.0	
" 11	6796.4		W	*v* 2.5 m	7.0	
" 14	6799.4	5	Wi	*v* 10 10	7.3	
" 18	6803.3	—	W	*v* 0.5 m	7.2	
" 19	6804.4	5	Wi	*v* 9 10; m 2 *v*	7.4	
" 26	6811.3	—	W	*v* 8 10; *v* 5 4	7.2	
Dec. 6	6821.3	—	W	*v* 4.5 10; *v* 2 4	7.6	
" 21	6836.3	—	W	*v* = 10; *v* 2 10	8.2	
1905						
Oct. 10	7129.3	5	W	*v* 6 21; *v* = h	9.0	
" 17	7136.4	5	W	14 4 *v*; *v* 5 h	8.8	
Nov. 18	7168.4	5	W	*v* 2 4; m 3 *v*	7.4	
1906						
May 29	7360.4	5	W	*v* 5 4; *v* 2 m	7.0	
June 14	7376.4	5	W	*v* 2 4	7.3	
" 24	7386.4	5	W	*v* = 4	7.5	
Nov. 2	7517.4	12	W	14 6 *v*; *v* = 22	9.4	
Dec. 2	7547.3	5	W	*v* 10 10; *v* 1 4; m 3 *v*	7.4	
1907						
June 8	7735.4	5	W	*v* 3 m	6.9	
" 27	7754.4	5	W	*v* 5 4; *v* 2.5 m	7.0	
Aug. 10	7798.4	3	W	*v* = 21	9.3	hazy
" 26	7814.4	3	W	*v* barely seen; est. 11+	11.0+	good seeing
Sept. 13	7832.4	5	W	*v* barely seen; 11.5 ±	11.5 ±	good seeing
" 26	7845.4	5	W	*v* not seen; est. 12+	12.0+	
Oct. 5	7854.4	5	W	*v* not seen; 44 seen	<11.0	
" 24	7873.3	5		*v* slightly brighter than 44	>11.0	
Dec. 7	7917.4	4	W	*v* 2 10; 4 3 *v*	8.0	
1909						
July 4	8492.4	5	W	*v* 6 5; *v* 2 4; 3 6 *v*	7.3	
" 17	8505.4	3	W	*v* 3 4; 3 4 *v*	7.2	
Aug. 7	8526.4	3	W	*v* 3 5; *v* = 4	7.5	
" 19	8538.4	3	W	*v* = 5	7.8	
Sept. 18	8568.4	5	W	*v* 3 22; *v* = 21	9.2	
Oct. 7	8587.4	5	W	43 2 *v*; *v* 2 44	10.8	
" 19	8599.4	5	W	*v* = 44	11.0	
Nov. 5	8616.4	5	W	*v* 2.5 44	10.8	
" 18	8629.4	12	F	*v* 2 41; 32 1 *v*	10.2	
Dec. 4	8645.4	5	W	*v* 3 21; 14 5 *v*; *v* 2 22	9.1	
1910						
Jan. 8	8680.4	5	W	*v* 3 4; 3 5 *v*	7.2	
Feb. 4	8707.4	12	F	*v* 2 7	7.8	
" 4	8707.4	3	F	4 1.5 *v*	7.6	finder
" 10	8713.4	12	F	*v* 3 7; 5 2 *v*	7.8	

TU CYGNI 194348 IV

1855.0; α $19^h\ 42^m\ 5^s$; δ $+48°\ 43'.2$.

Comparison stars; Hagen numbers and magnitudes used; on map with RT Cygni.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 19	8599.4	5	W	31 5 v; 42 2 v	10.6	
Nov. 5	8616.4	5	W	v 2 31; 24 3 v	9.8	
Dec. 4	8645.4	5	W	v = 31	10.1	
1910						
Jan. 8	8680.4	5	W	v est. 11.5 ±	11.5 ±	near limit

χ CYGNI 194632 III and V

1855.0; α $19^h\ 45^m\ 0^s$; δ $+32°\ 33'.0$.

Comparison stars; the designations of the brighter stars were taken from Schurig's Atlas, and their magnitudes from Hagen, series V, column H. P.; they are η, b′ (Bayer's letters) and $\overline{8}$, $\overline{17}$, $\overline{39}$, $\overline{41}$, (Flamsteed's numbers); Hagen numbers were used for the fainter stars, and their magnitudes were taken from *Annals,* vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Nov. 21	6806.4	5	—	v 10 3 ; 1 1 v	5.2	
" 28	6813.4	B	W	v 7 $\overline{17}$; v 3 $\overline{8}$; η 7 v	4.6	
" 30	6815.4	5	W	v 5 1	4.6	
Dec. 6	6821.4	B	W	v 4 $\overline{17}$; $\overline{39}$ 3 v	4.8	hazy
" 9	6824.4	B	Wi	η 5 v; v 7 $\overline{17}$	4.4	
" 9	6824.4	B	W	v 3 $\overline{39}$; η 3 v	4.4	
" 16	6831.4	B	W	η 2 v; v = $\overline{41}$; $\overline{41}$ 1 v	4.2	
" 21	6836.4	B	W	η 3 v; v = 41	4.2	
" 28	6843.4	B	W	η 5 v; v 5.5 $\overline{17}$	4.5	
1905						
Jan. 10	6856.3	B	W	v 3 $\overline{17}$	4.8	
" 23	6869.3	B	W	$\overline{17}$ 5 v; v = b	5.6	low
1907						
Oct. 2	7851.4	5	W	v not seen; 87 seen	<12.0	
" 9	7858.4	12	W	v = 97	12.4	
" 30	7879.4	12	W	v = 107	12.7	
Nov. 12	7892.4	12	W	v = 97	12.4	
1911						
Nov. 18	9359.4	5	S	6 3 v; v 2 7	8.0	
" 22	9363.4	5	S	v = 13; v 3 18	9.0	
Dec. 13	9384.4	5	S	20 4 v; v 2 27	9.6	

η AQUILAE 194700 V

1855.0; α $19^h 45^m 5^s$; δ $+0° 38'.2$.

Comparison stars; letters taken from Schurig's map, magnitudes taken from Hagen catalog, column H. P. Observations made with the naked eye.

Date	J. D.	Hour	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Aug. 5	7063	10^h 27^m	W	$v = \iota$	4.3	
" 23	7081	9 45	W	$\delta\ 4\ v;\ v\ 5\ \beta$	3.6	
Oct. 12	7131	——	W	$\theta\ 5\ v;\ v\ 3\ \beta$	3.6	prob. early in evening
" 16	7135	9 15	W	$v = \iota$	4.3	
" 17	7136	10 5	W	$v\ 4\ \iota;\ \delta\ 7\ v$	4.0	
" 26	7145	9 30	W	$v\ 4\ \iota;\ v = \beta$	3.8	
" 28	7147	7 45	W	$v\ 1\ \beta;\ \delta\ 4\ v$	3.8	
" 30	7149	8 44	W	$v\ 3\ \iota;\ \beta\ 5\ v$	4.2	misty, poor
Nov. 2	7152	8 ±	W	$v\ 3\ \beta;\ \delta\ 2\ v$	3.6	
" 14	7164	6 15	W	$v = \beta$	3.8	
" 16	7166	7 5	W	$v\ 2\ \beta$	3.6	
" 18	7168	7 50	W	$v\ 2\ \beta$	3.6	
" 25	7175	8 ±	W	$\beta\ 3\ v;\ \delta\ 5\ v$	4.0	

Z CYGNI 195849 III

1855.0; α $19^h 57^m 21^s$; δ $+49° 38'.5$.

Comparison stars; Hagen map and numbers used with one additional faint star, 90, which was detected first in the sky and then identified later on a Parkhurst photograph. The magnitudes were obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 261, as far as no. 78. Beyond this point the observed magnitudes did not agree with those from the curve, and hence the adopted values were obtained by comparison and direct estimation. The co-ordinates of the magnitude curve will be found in Table III.

80, 13.1 mg.; 90, 13.2 mg.; 82, 13.5 mg. (Harv. y)
90, 1900. α $19^h 58^m 34^s$, δ $+49° 46'.2$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
May 16	5886.5	5	W	$2\ 7\ v\ 3\ 6;\ 2\ 6\ v\ 4\ 6$	8.3	
" 31	5901.5	5	W	$v = 19$	9.8	low

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Sept. 11	7465.4	5	W	v 2.5 19; 8 4 v	9.5	
Oct. 8	7492.4	5	W	v 2 19; 7 2 v	9.4	
“ 13	7497.4	5	W	v = 19	9.8	
Nov. 2	7517.4	12	W	v = 45; 38 2 v	11.1	
“ 14	7529.4	5	W	48 2 v; v est. 12.0	11.8	near limit
Dec. 7	7552.4	5	W	48 3 v; v est. 12.0+	11.8	
1907						
June 8	7735.4	5	W	8 3 v; v = 19	9.6	
July 16	7773.4	3	W	v not seen; 34 seen	<10.6	moon, hazy
Aug. 3	7791.4	3	W	v not seen; 45 barely seen	<11.2	
“ 13	7801.4	3	W	v barely seen; 38 seen	<10.8	good seeing
“ 26	7814.4	3	W	v possibly seen, est. <11.5	<11.5	good seeing
Oct. 30	7879.4	12	W	v = 82	13.5	
Dec. 7	7917.4	4	W	19 2 v; v 3 28	10.0	
1909						
July 1	8489.4	5	W	v 2 7; v = 6	8.8	
“ 17	8505.4	3	W	6 2 v; v 3 8	8.8	
Aug. 7	8526.4	3	W	v = 28; v est. 10.2 ±	10.3	
“ 19	8538.4	3	W	v = 26	10.2	
Sept. 18	8568.4	5	W	54 3 v	12.2	
Oct. 6	8586.4	12	F	v 2 82	13.3	
“ 16	8596.4	12	F	v 2 82	13.3	82 just seen
Nov. 5	8616.3	12	F	v 3 82; v = 90	13.2	
“ 15	8626.4	12	F	v 2 82; 90 1 v	13.3	
“ 29	8640.2	12	F	v = 90; 90 1 v	13.2	
Dec. 10	8651.4	12	F	v = 90	13.2	
1910						
Jan. 7	8679.3	12	F	v = 90	13.2	
Feb. 4	8707.4	12	F	v = 19	9.8	
“ 7	8710.4	12	F	8 2 v; v 1.5 10	9.1	poor images
“ 10	8713.4	12	F	v 4 19; 8 4 v	9.4	
Sept. 29	8944.4	12	F	v 2 34; 28 4 v	10.6	
Oct. 26	8971.4	12	F	8 4 v 4 19	9.4	
Nov. 11	8987.4	12	F	v = 6	8.8	moon
Dec. 2	9008.3	12	F	v = 6	8.8	
“ 8	9014.4	5	S	6 4 v; v 4 19	9.3	moon
1911						
Nov. 18	9359.4	5	S	v not seen; 48 seen	<11.4	
“ 20	9361.4	12	F	80 2 v; v = 90	13.2	
Dec. 8	9379.3	12	F	69 4 v 2 80	12.8	
1912						
Jan. 25	9427.3	12	F	v = 90	13.2	moon
Feb. 12	9445.3	12	F	v not > 82	13.5+	low
Nov. 29	9736.3	12	F	v = 90	13.2	not v. clear
Dec. 6	9743.3	12	F	v 2 90; v = 80	13.0	

SW CYGNI 200346 VI

1855.0; α $20^{h}\ 2^{m}\ 25^{s}$; δ $+45°\ 52'.9$.

Comparison stars; a *Durchmusterung* map was used, and the stars later identified with Hagen's list. His numbers and magnitudes were adopted.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Dec. 11	6460	8^h 4^m	12	W	$v = 20$	10.1	
" 11	6460	8 4	12	W	phot. comp. with 20	10.1	
" 11	6460	9 50	12	W	phot. comp. with 20	11.0	

RY CYGNI 200635

1855.0; α $20^h 4^m 55^s$; δ +35° 31′.0.

Comparison stars; a is B. D. 35° 4003, mg. 8.8, b is 35° 4004, mg. 8.3, the magnitudes being taken from Potsdam *Photographische Himmelskarte,* vol. III, plate 615.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Nov. 9	6428.4	12	W	a 2 v; v 3 b	8.5	
" 12	6431.4		W	v = a; a 1 v; b 1 v	8.7	
" 20	6439.4	12	W	phot. comp. with a and b	9.0	
" 21	6440.4	12	W	v = a; a 2 v; a 1 v	8.9	
" 30	6449.3	12	W	phot. comp. with a and b	8.6	
Dec. 15	6464.4	12	W	a 2 v	9.0	
" 15	6464.4	12	W	phot. comp. with a and b	8.7	

S AQUILAE 200715a IV

1855.0; α $20^h 4^m 57^s$; δ +15° 11′.5.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
July 21	8509.4	3	W	27 3 v; $v = 30$	9.8	
Aug. 6	8525.4	3	W	27 3 v; $v = 30$	9.8	
" 19	8538.4	3	W	$v = 50$	10.6	
Sept. 5	8555.4	3	W	$v = 50$	10.6	
Oct. 6	8586.4	4	W	50 4 v	11.0	
" 19	8599.4	5	W	50 2 v; v 3 53	10.8	
Nov. 1	8612.4	4	W	$v = 50$	10.6	
" 9	8620.4	5	W	v 3 27	9.1	
" 12	8623.4	5	W	v 2.5 27; 25 2 v	9.1	
" 29	8640.4	5	W	v 3 27	9.1	
Dec. 5	8646.4	5	W	v 0.5 27	9.4	
1910						
Oct. 4	8949.4	12	F	v 4 27; $v = 25$	9.0	
" 11	8956.4	12	F	v 3 27	9.1	
" 26	8971.3	12	F	27 4 v; v 6 41	9.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Nov. 7	8983.4	12	F	27 4 *v*; *v* 2 41	9.8	
" 11	8987.4	12	F	41 2 *v*; *v* 3 49	10.3	
Dec. 2	9008.2	12	F	*v* = 53	11.1	
" 8	9014.3	12	F	53 4 *v*; 50 7 *v*	11.4	
1911						
Jan. 10	9047.3	12	F	41 4 *v*; *v* 2 50	10.4	
" 17	9054.3	12	F	41 2 *v*; *v* 3 50	10.3	
Oct. 12	9322.4	12	F	50 2 *v*; *v* 4 54	11.2	
" 23	9333.3	12	F	53 1.5 *v*; *v* 2 54	11.5	
Nov. 10	9351.4	12	F	41 2 *v*; *v* 4 50	10.2	
" 21	9362.3	12	F	27 6 *v*; *v* = 41	10.0	
Dec. 6	9377.3	12	F	*v* = 35; *v* 1 41	10.0	
" 20	9391.3	12	F	27 3 *v*; *v* 1 30	9.7	

RW AQUILAE 200715b IV

1855.0; α $20^{h}\ 5^{m}\ 12^{s}$; δ $+15° 37'.8$.

Comparison stars; on map with *S Aquilae.*

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241							
Oct. 4	8949	8^{h}	$\pm^{m}$	12	F	25 4 *v*; *v* 4 40	9.5	
" 11	8956	8	40	12	F	25 4 *v*; *v* 2 29	9.3	moon 6 days
" 26	8971	7	40	12	F	25 2 *v*; *v* 4 40	9.4	
Nov. 7	8983	8	30	12	F	25 4 *v*; *v* 2 34	9.5	
" 11	8987	7	50	12	F	25 3 *v*; *v* 3 29	9.2	moon
Dec. 8	9014	8	15	12	F	25 2 *v*; *v* 2 29	9.2	

R SAGITTAE 200916 IV

1855.0; α $20^{h}\ 7^{m}\ 27^{s}$; δ $+16° 17'.4$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
July 21	8509.4	3	W	*v* = 23 (S Aquilae map)	8.7	
Aug. 6	8525.4	3	W	*v* 2 23 (S Aquilae map)	8.5	
Sept. 5	8555.4	3	W	*v* = 23 (S Aquilae map)	8.7	
Oct. 7	8587.4	5	S	19 1 *v*; *v* 1 24	9.2	
" 26	8606.4	5	S	24 1 *v*; *v* 4 30	9.2	
Nov. 12	8623.4	5	S	*v* 1 24; 19 2 *v*	9.2	
" 18	8629.4	5	S	*v* 2 24; 19 1 *v*	9.1	
1910						
Dec. 8	9014.4	5	S	*v* between 19 and 24	9.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Oct. 16	9326.4	5	S	*v* = 24; 15 2 *v*	9.0	
" 23	9333.4	5	S	24 2 *v*; *v* 8 35	9.2	
Nov. 7	9348.4	5	S	24 2 *v*; *v* 10 40	9.3	
" 18	9359.4	5	S	12 2 *v*; *v* 1 15	8.4	
1912						
Oct. 29	9705.4	5	Wh	*v* 1 24; 19 1 *v*	9.2	
Nov. 5	9712.4	5	Wh	19 1 *v*; *v* 1 24	9.2	
" 12	9719.4	5	Wh	19 1 *v*; *v* 1 24	9.2	

RS CYGNI 200938 IV

1855.0; α $20^h\ 8^m\ 7^s$; δ $+38°\ 17'.4$.

Comparison stars; numbers and magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Nov. 9	6428.4	12	W	*v* = 4; *v* 2 4; *v* 1 4	6.9	*v* very red
" 12	6431.4	—	W	*v* 1 4	6.9	
" 20	6439.4	—	W	*v* 2 4; *v* 3 4	6.8	
" 21	6440.4	—	W	*v* 3 4	6.7	
" 30	6449.4	—	W	*v* 3 4	6.7	

R DELPHINI 201008 II

1855.0; α $20^h\ 7^m\ 55^s$; δ $+8°\ 39'.1$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Oct. 30	6784.4	—	W	*v* = 32 just visible	11.6	
1906						
Oct. 23	7507.4	—	W	*v* = 4; 2 5 *v*; *v* 6 9	8.8	
Dec. 7	7552.4	5	W	4 3 *v*; *v* 5.5 9	9.0	
1907						
Aug. 14	7802.4	3	W	*v* 3 3; *v* = 2	8.4	
" 15	7803.4	3	W	*v* 3 4; *v* 3 3; *v* = 2	8.4	
" 26	7814.4	3	W	*v* 2 3; *v* = 2	8.4	
Sept. 13	7832.4	5	W	4 2 *v*	9.0	
Oct. 12	7861.4	5	W	14 5 *v*; *v* 3 22	10.6	
" 24	7873.4	5	W	*v* = 26	11.1	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 26	8971.4	5	S	*v* = 10; *v* 5 14	9.4	
Nov. 11	8987.4	5	S	10 3 *v*; *v* 2 14	9.8	
“ 19	8995.4	5	S	10 4 *v*; *v* = 14	9.9	
Dec. 2	9008.3	12	F	*v* 3 17; *v* = 14	10.0	
“ 9	9015.4	5	S	*v* = 25; 15 8 *v*	11.0	

U CYGNI 201647 IV

1855.0; α $20^h\,15^m\,7^s$; δ $+47^\circ\,26'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Nov. 27	6081.4	5	W	10 5 *v*; *v* 5 26	8.6	
1909						
Oct. 8	8588.4	5	S	7 1 *v*; *v* 3 10	7.6	
“ 19	8599.4	5	S	6 3 *v*; *v* 3 10	7.6	
“ 30	8610.4	5	S	4 8 *v*; *v* 4 10	7.5	
Nov. 11	8622.4	5	S	*v* = 10; *v* 2 12	7.8	
“ 30	8641.4	5	S	*v* = 10	7.9	
Dec. 6	8647.4	5	S	*v* = 10	7.9	
1910						
Jan. 10	8682.4	5	S	25 2 *v*	9.2	
Feb. 1	8704.4	5	S	32 3 *v*; *v* 3 42	10.2	
Nov. 11	8987.4	5	S	*v* = 10	7.9	
“ 19	8995.4	5	S	7 1 *v*; *v* 2 10	7.6	
Dec. 8	9014.4	5	S	7 1 *v*; *v* 2 10	7.6	
1911						
Oct. 23	9333.4	5	S	*v* = 28; *v* 4 42	9.8	
Nov. 7	9348.4	5	S	10 3 *v*; *v* 8 42	8.9	
“ 13	9354.4	5	S	10 1 *v*; *v* 1 12	8.0	
Dec. 19	9390.4	5	S	10 1 *v*; *v* 2 12	7.9	
1912						
Jan. 19	9421.4	5	S	10 2 *v*; *v* 5 26	8.4	low
Oct. 2	9678.4	5	Wh	42 2 *v*; *v* 2 49	10.6	
“ 5	9681.4	5	Wh	42 1 *v*; *v* 2 49	10.6	
“ 8	9684.3	5	Wh	42 1 *v*; *v* 2 49	10.6	
“ 15	9691.3	5	Wh	42 = *v*; *v* 3 49	10.4	

RW CYGNI 202539 IV

1855.0; α $20^h\,23^m\,35^s$; δ $+39^\circ\,30'.1$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Nov. 9	6428.5	12	W	v 3 18; 4 2.5 v	7.6	very red
" 12	6431.4	3	W	18 4 v; 18 3 v	8.4	
" 12	6431.4	12	W	v = 18	8.1	
" 20	6439.4	12	W	v 2 18	7.9	
" 20	6439.4	12	W	phot. comp. with 18	7.8	
" 30	6449.4	12	W	phot. comp. with 18	7.7	
Dec. 10	6459.4	12	W	phot. comp. with 18	7.7	very red
" 15	6464.4	—	W	v 5 18	7.6	
1905						
Dec. 16	7196.4	—	W	18 4 v; v 5 22	8.4	

SZ CYGNI 202946 IV

1855.0; α $20^h\ 28^m\ 10^s$; δ $+46°\ 6'.5$.

Comparison stars; a map published by A. Stanley Williams in *Ast. Nach.* no. 3629 was used. The comparison star was later identified with Hagen's map, and his numbers and magnitudes adopted.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Nov. 18	6437.4	——		W	v = 33	9.4	
" 20	6439	$11^h\ 5^m$	12	W	phot. comp. with 33	9.1	
" 25	6444	9 50	12	W	phot. comp. with 33	9.1	
" 25	6444	10 50	12	W	phot. comp. with 33	9.2	
" 30	6449	9 5	12	W	phot. comp. with 33	9.6	
Dec. 10	6459	9 25	12	W	phot. comp. with 33	9.1	

TV CYGNI 203046 IV

1855.0; α $20^h\ 28^m\ 34^s$; δ $+46°\ 4'.2$.

Comparison stars; this star, which is also on the Stanley Williams map, is star 36 on Hagen's map for SZ Cygni, and the comparison star used is star 48 on that map.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Nov. 18	6437.4	——		W	v = 48	10.3	
" 20	6439	11^h —	12	W	phot. comp. with 48	10.3	
" 20	6439	11 —	12	W	v = 48	10.3	
" 25	6444	10 —	12	W	phot. comp. with 48	10.6	
" 25	6444	10 —	12	W	48 3 v	10.6	
" 25	6444	10 50^m	12	W	phot. comp. with 48	10.4	

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Nov. 25	6444	10^h 50^m	12	W	*v* = 48	10.3	
" 30	6449	9 30	12	W	phot. comp. with 48	10.1	
Dec. 10	6459	9 5	12	W	phot. comp. with 48	10.8	
" 10	6459	9 5	12	W	48 5 *v*	10.8	

V VULPECULAE 203226 IV

1855.0; α $20^h\,30^m\,22^s$; δ $+26°\,6'.2$.

Comparison stars; Hagen numbers and magnitudes used.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Oct. 3	8218.41	5	W	26 2 *v*; *v* 4 28	9.0	
" 6	8221.40	5	W	*v* 2 26; *v* = 19; *v* = 26	8.7	moon
" 13	8228.37	5	W	*v* 3 26; *v* 2 19; *v* = 15	8.5	moon
" 20	8235.35	5	W	*v* 0.5 26	8.8	
" 30	8245.4	5	W	*v* = 26	8.9	
Nov. 13	8259.33	5	W	*v* 4 26	8.5	
Dec. 1	8277.4	5	W	*v* 2 26; *v* = 16	8.6	
" 12	8288.4	4	W	*v* 1 26	8.8	
1909						
Jan. 2	8309.4	12	W	*v* 3 26; *v* = 16	8.6	moon

Y DELPHINI 203611

1855.0; α $20^h\,34^m\,44^s$; δ $+11°\,21'.8$.

Comparison stars; letters taken directly from map made from *Annals*, vol. 57, p. 264. One additional star, *o*, has position $20^h\,36^m\,56^s$ rt. asc. and 11° 32′.3 decl. and magnitude estimated 13.5

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 30	8641.3	12	F	*v* not seen; n seen with diff.	<13.0	fine seeing
Dec. 11	8652.3	12	F	*v* not seen; l and m seen with diff.	<12.4	hazy
1910						
Jan. 8	8680.3	12	F	*v* not seen; l, m, n seen	<13.0	low, faint
Oct. 29	8974.4	12	F	o 4 *v*; *v* est. 14.0	14.0	fine seeing
Nov. 7	8983.4	12	F	n 2 *v*	13.4	very clear
Dec. 2	9008.3	12	F	o 2 *v*	13.7	good seeing
" 8	9014.3	12	F	*v* not seen; l on limit	<12.1	moon
1911						
Jan. 10	9047.3	12	F	*v* not seen; g, h, and k seen—k ft.	<11.7	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Jan. 17	9054.3	12	F	*v* not seen; l, m, n, o seen	<13.5	
Oct. 16	9326.3	12	F	d 2 *v*; *v* 3 g	10.6	
" 23	9333.4	12	F	*v* 3 g; d 3 *v*; *v* 2 f	10.6	
Nov. 10	9351.4	12	F	g 2 *v*; *v* 1 h	11.3	misty
" 21	9362.4	12	F	k 1 *v*; *v* 3 l	11.8	
Dec. 8	9379.3	12	F	k 2 *v*; *v* 2 l	11.9	
1912						
Jan. 16	9418.3	12	F	*v* not seen; l barely seen	<12.1	im. blurry
Oct. 16	9692.4	12	F	o 2 *v*; *v* faint	13.7	moon
" 30	9706.4	12	F	*v* invisible; n faintest seen	<13.0	moon
Nov. 5	9712.4	12	F	*v* very faint; o difficult	<13.5	
" 18	9725.4	12	F	*v* invisible; l faintest seen	<12.1	
" 29	9736.3	12	F	*v* not seen; n faintest seen	<13.0	
Dec. 6	9743.3	12	F	*v* = n	13.0	misty
" 16	9753.3	12	F	*v* = m	12.4	l., v. clear

V CYGNI 203847 III

1855.0; α $20^h 36^m 38^s$; δ $+47° 37'.5$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Sept. 24	7478.4	–	W	*v* = 35	11.5	
Nov. 14	7529.4	5	W	doubtful if seen; est. 12+	12.0+	
Dec. 7	7552.4	5	W	*v* not seen; <35	<11.5	
1907						
July 16	7773.4	3	W	*v* not seen; 26 seen	<10.7	moon, hazy
Aug. 13	7801.4	3	W	*v* perhaps caught; est. 11+	11.0+	good seeing
" 28	7816.4	3	W	27 5 *v*; *v* = 35	11.4	good seeing
Sept. 13	7832.4	5	W	35 5 *v*; *v* = 57	12.0	
" 26	7845.4	5	W	*v* 3 35; *v* = 29	11.2	
Oct. 8	7857.4	5	W	*v* = 29; *v* 3 35	11.2	
" 16	7865.4	5	W	*v* on limit; 11±	11.0±	moon, hazy

S DELPHINI 203816 II

1855.0; α $20^h 36^m 24^s$; δ $+16° 34'.2$.

Comparison stars; Hagen numbers used. The magnitudes were obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 264. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Oct. 9	8588.4	5	W	23 3 *v*; *v* = 26	10.9	
" 16	8596.4	5	W	23 2 *v*	10.9	
" 25	8605.4	5	W	*v* = 23	10.7	
Nov. 5	8617.4	5	W	17 4 *v*; *v* 5 23	10.4	
" 18	8629.4	4	W	8 3 *v*; *v* = 14	9.8	
Dec. 6	8647.4	5	W	*v* 1 8; 5 8 *v*	9.4	
1910						
Oct. 4	8949.4	12	F	*v* = 11	10.0	
" 26	8971.3	12	F	5 4 *v*; *v* 2 8	9.1	
Nov. 7	8983.4	12	F	5 6 *v*; *v* 4 8	9.1	
Dec. 8	9014.3	12	F	*v* 1.5 8; 6 4 *v*	9.3	
1911						
Jan. 10	9047.3	12	F	5 6 *v*; *v* 1 8	9.2	
" 17	9054.3	12	F	*v* = 8	9.4	
Oct. 16	9326.3	12	F	17 2 *v*; *v* 2 23	10.5	
" 23	9333.3	12	F	*v* 2 23: 17 1.5 *v*; *v* 2 22	10.5	
Nov. 10	9351.4	12	F	22 1 *v*; *v* 1 23	10.7	
" 21	9362.4	12	F	26 2 *v*; *v* 4 30	11.0	
Dec. 8	9379.3	12	F	23 2 *v*; *v* 6 30	10.9	
1912						
Jan. 16	9418.3	12	F	26 3 *v*; *v* 4 30	11.1	

Y AQUARII *203905* VI

1855.0; α $20^h\,36^m\,46^s$; δ $-5^\circ\,21'.6$.

Comparison stars; Hagen numbers were used, with three additional faint stars, *x, y,* and *z*. As this variable is in Series VI, the magnitudes should be taken from the column headed H. P. in the catalog. However, the magnitudes of the fainter stars do not agree with the observations, hence a new curve was drawn, based on the Hagen grades and the Harvard magnitudes, *Annals*, vol. 57, p. 265, with the additional magnitude for star 49 of 12.4, which was obtained by estimation. The magnitudes up to that of star 34 are only slightly altered. The co-ordinates of this curve will be found in Table III. The positions of the additional faint stars are as follows:

Des.	Mg.	α 1900	δ 1900
x	13.1	$20^h\ 39^m\ 12^s$	$-5^\circ\ 12'.9$
y	13.4	38 50	8.6
z	13.8	39 18	11.9

x and y are respectively q and n of the Harvard list. The magnitudes of these stars were obtained by estimation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 4	8949.4	12	F	*v*, very ft., est. 14.0; *v* = x = y	13.5	
" 26	8971.3	12	F	*v* = y; 49 7 *v*	13.2	on limit
Nov. 7	8983.4	12	F	*v* not seen; 49, x, y, seen	<13.4	
Dec. 2	9008.2	12	F	29 2 *v*; *v* 2 40	12.0	good seeing
" 8	9014.3	12	F	*v* about = 32	12.0 ±	faint, moon
1911						
Oct. 16	9326.3	12	F	*v* not seen; x, y, z, seen	<13.8	
" 23	9333.4	12	F	*v* not seen; x, y, z, seen	<13.8	
Nov. 13	9354.3	12	F	*v* not seen, est. <14.2; x, y, z, seen	<14.2	
" 22	9363.4	12	F	*v* not seen, est. <14.2; x, y, z, seen	<14.2	
Dec. 8	9379.3	12	F	*v* not seen; 44, 49, x, seen	<13.1	
" 13	9384.3	12	F	*v* not seen; x and y seen	<13.4	

T DELPHINI 204016 II

1855.0; α $20^h 38^m 38^s$; δ $+15° 52'.4$.

Comparison stars; Hagen numbers were used. The magnitudes for all but the faint stars were taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 265. The coordinates of this curve will be found in Table III. The magnitudes of the faint stars used did not seem to agree with the order as indicated by the Hagen grades, and hence were obtained by direct estimation and inter-comparison. They will be found in the table below. One additional faint star, 75, was used, the position of which was found from a Parkhurst photograph.

75: 1900, α $20^h 40^m 32^s$; δ $+16° 2'.0$.

Hagen	mg.
66	13.0
72	13.0
70	13.2
61	13.3
58	13.4
75	14.0

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 9	8589.4	5	W	*v* not seen; est. <12.0	<12.0	
" 12	8592.4	12	F	*v* not seen; 70 well seen	<13.2	fine seeing
Nov. 6	8617.3	12	F	*v* not seen; 70 easily seen	<13.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 29	8640.3	12	F	*v* on limit, est. 14.2; *v* .6 < 70	14.0	fine seeing
Dec. 19	8660.3	12	F	*v* not seen; 58 faintest seen	<13.4	
1910						
Jan. 8	8680.3	12	F	*v* on limit, est. 14.0; 61 seen easily	14.0	very clear
Nov. 7	8983.4	12	F	*v* not seen, est. <14.0; 70 seen	<14.0	very clear
Dec. 2	9008.3	12	F	72 8 *v*; *v* about = Y Delph. (13.9)	13.8	good seeing
" 8	9014.3	12	F	*v* and 58 both on limit	13.4 ±	
1911						
Jan. 10	9047.3	12	F	*v* = 25; 21 6 *v*	11.6	moon
" 17	9054.3	12	F	21 2 *v*; *v* 2 27	11.4	
Oct. 16	9326.3	12	F	*v* on limit, est. 14.0; 72 1 mg + *v*	14.0+	
" 23	9333.4	12	F	*v* 3 75	13.7	fine seeing
" 25	9335.4	12	F	*v* est. 13.2–3; 61 2 *v*	13.4	very clear
Nov. 10	9351.4	12	F	*v*, barely visible, about = 58	13.4	moon
" 13	9354.3	12	F	*v* = 48; 44 4 *v*	12.9	
" 21	9362.4	12	F	*v* = 48	12.8	very clear
Dec. 8	9379.3	12	F	40 2 *v*; *v* = 47	12.7	
1912						
Jan. 16	9418.3	12	F	8 1 *v* 2 11	9.7	
June 12	9566.4	12	F	*v* not seen, est. <14.2; 75 seen	<14.2	very clear
Oct. 14	9690.4	12	F	*v* = 33	12.1	
Nov. 1	9708.4	12	F	27 2 *v*; *v* 4 33	11.8	

V AQUARII 204102 IV

1855.0; α $20^h 39^m 29^s$; δ $+1^\circ 54'.6$.

Comparison stars; magnitudes taken directly from a Harvard photograph.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Sept. 24	7478.4	5	W	*v* 6 8.9; 8.0 3 *v*	8.3	
Nov. 7	7522.4	5	W	*v* = 8.5	8.5	

V DELPHINI 204318 VI

1855.0; α $20^h 41^m 11^s$; δ $+19^\circ 48'.3$.

As this star is among those treated in Parkhurst, *Researches in Stellar Photometry*, it was used principally to obtain standards for the fainter stars, and hence is fully treated in the introduction, p. 10.

As neither of the scales given in the Hagen catalog seemed to agree with the observed magnitudes of the faint stars below the 12th magnitude, a new curve was drawn with Hagen grades and Parkhurst magnitudes, taken from p. 147, table 91, column "H." The identification is given in the Hagen catalog, column "Notae," but the magnitudes there found appear to be the mean of the Harvard and Potsdam values. As the magnitudes in the present work are based as far as possible on the Harvard system, the values used for the curve are taken directly from Parkhurst's table. The co-ordinates of the curve will be found in Table III.

The additional faint stars used, which were taken from the Parkhurst table, p. 147, are given below.

Des.	Mag.	α 1900			δ 1900	
y	13.5	20^h	43^m	21^s	+18°	58′.7
τ	13.6		43	21		55.3
ω	13.7		43	10		56.2
σ	14.1		43	13		55.5

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 5	8616.4	5	W	*v* not seen; 46 seen	<11.6	
" 29	8640.4	12	F	31 1 *v*; *v* 1 33	11.0	
Dec. 11	8652.3	12	F	26 1 *v*; *v* 3 29	10.7	
1910						
Jan. 8	8680.3	12	F	*v* 2.5 24; 22 5 *v*	10.6	
1911						
Oct. 25	9335.3	12	F	*v* 4 y; 50 6 *v*	12.8	very clear
Nov. 13	9354.3	12	F	*v* = y	13.5	very clear
" 21	9362.4	12	F	*v* = y	13.5	
Dec. 13	9384.3	12	F	*v* not seen; σ glimpsed	<14.1	
1912						
Jan. 16	9418.3	12	F	*v* not seen; 50 seen	<12.0	

T AQUARII *204405* I

1855.0; α $20^h\ 42^m\ 17^s$; δ −5° 40′.9.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Oct. 5	7854.4	5	W	*v* not seen; <12.0	<12.0	
" 9	7858.4	12	W	52 5 *v*; *v* 5 58	13.0	hazy
" 31	7880.4	12	W	*v* = 21	10.9	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Aug. 13	8532.4	3	W	*v* 3 9; 6 4 *v*	8.6	
" 25	8544.4	3	W	*v* 4 9; *v* = 7	8.6	
Sept. 17	8567.4	5	W	9 2 *v*; *v* 8 10	9.1	
Oct. 7	8587.4	4	W	*v* 2 10; 9 8 *v*	9.7	
" 19	8599.4	5	W	17 3 *v*; 19 1 *v*	10.7	
Nov. 5	8616.4	5	W	*v* 1 40	12.0	
" 29	8640.3	12	F	58 2 *v*; *v* = 60	13.4	
Dec. 11	8652.3	12	F	*v* not seen; 40 faintest seen	<12.1	cloudy
" 19	8660.4	12	F	*v* nearly invisible; 52 seen; 58, 60, barely	<13.4	moon
1910						
Jan. 8	8680.3	12	F	*v* = 21, both faint	10.9	very low
Oct. 4	8949.4	3	F	*v* 2 4; *v* 4 5	7.2	
" 21	8966.4	5	S	6 3 *v*; *v* 3 9	8.6	
" 26	8971.4	5	S	*v* 4 9; 6 4 *v*; 7 1 *v*	8.6	
" 30	8975.4	5	K	*v* 2 9; 6 5 *v*	8.7	
Nov. 7	8983.4	5	K	9 2 *v*; *v* 1 10	9.4	
" 19	8995.4	5	S	9 5 *v*; *v* 1 10	9.6	
Dec. 2	9008.3	12	F	17 4 *v*; *v* 6 21	10.6	
" 9	9015.4	5	S	*v* < 17	<10.4	*v* on limit
1911						
Nov. 10	9351.4	5	S	6 1 *v*; *v* 2 9	8.5	
" 22	9363.4	5	S	6 2 *v*; *v* 2 9	8.6	

TX CYGNI 205642 IV

1855.0; α $20^h\,54^m\,46^s$; δ $+42°\,2'.0$.

Comparison stars; a *Durchmusterung* map was used. The stars were later identified with those of Hagen and his numbers and magnitudes adopted.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Nov. 30	6449	$10^h\ 12^m$	12	W	phot. comp. with 26	9.8	
Dec. 10	6459	8 30	12	W	phot. comp. with 26 and 38	9.8	
" 10	6459	8 30	12	W	*v* 4 38	10.0	

R VULPECULAE 205923 II

1855.0; α $20^h\,57^m\,56^s$; δ $+23°\,14'.9$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
June 27	7389.4	5	W	*v* 4 25; 11 2 *v*	9.9	
Oct. 25	7509.4	5	W	*v* probably not seen; 31 seen	<10.8	
Nov. 8	7523.4	5	W	*v* = 11	9.6	
" 29	7544.4	5	W	*v* 3 4; 3 5 *v*	8.0	
Dec. 1	7546.3	5	W	*v* 4 4	8.0	
1907						
Oct. 8	7857.4	5	W	*v* 3 19; *v* = 11	9.7	
" 30	7879.4	4	W	*v* = 59; 57 5 *v*	12.2	
Dec. 12	7922.4	5	W	*v* not seen; 20 seen	<10.1	low, moon
1908						
Oct. 3	8218.4	5	W	3 5 *v*; *v* 3 4	8.0	
" 6	8221.4	5	W	3 3 *v*; *v* 7 4	7.7	moon
" 13	8228.4	5	W	2 4 *v*; 3 1 *v*	7.6	moon
" 20	8235.4	5	W	3 0.5 *v*; 2 3 *v*	7.5	
" 30	8245.4	5	W	3 4 *v*; *v* 8 4	7.7	
Nov. 13	8259.4	5	W	*v* 5 9; 5 3 *v*	8.9	
Dec. 1	8277.4	5	W	25 2 *v*; *v* 2 31	10.6	
1909						
Jan. 2	8309.4	12	W	*v* probably not seen; 40 seen	<11.4	hazy, low
Oct. 6	8586.4	5	S	*v* not seen; est. <12.0	<12.0	
" 12	8592.4	5	S	*v* not seen; est. <12.0	<12.0	near limit
" 19	8599.4	5	S	25 4 *v*; *v* 3 35	10.8	
Nov. 1	8612.4	5	S	13 2 *v*; *v* 2 19	9.9	
" 11	8622.4	5	S	5 2 *v*; *v* 1 6	8.9	
" 30	8641.4	5	S	3 2 *v*; *v* 2 4	7.9	
Dec. 8	8649.4	5	S	3 1 *v*; *v* 4 5	7.8	
1910						
Oct. 26	8971.4	5	S	*v* not seen; est. <12.0	<12.0	very clear
" 29	8974.4	12	F	63 2 *v*; *v* 2 69	12.3	
Nov. 11	8987.4	12	F	63 6 *v*; 66 4 *v*	12.7	faint, moon
Dec. 2	9008.2	12	F	40 2 *v*; *v* 2 57	11.6	
" 8	9014.3	12	F	41 2 *v*; *v* 3 45	11.4	
1911						
Jan. 10	9047.3	12	F	3 4 *v*; *v* 7 5	7.8	moon
" 17	9054.3	12	F	3 4 *v*; 2 2 *v*	7.6	
" 28	9065.3	12	F	3 7 *v*; *v* 5 5	8.1	l., im. blurry
Nov. 10	9351.4	5	S	*v* = 5; *v* 3 6	8.7	
Dec. 13	9384.4	5	S	25 5 *v*; *v* = 31	10.8	
1912						
Nov. 12	9719.4	5	Wh.	6 2 *v*; *v* 1 9	9.3	

TW CYGNI 210129 VI

1855.0; α $20^h 59^m 50^s$; δ $+28° 49'.6$.

Comparison stars; Hagen numbers used. The magnitudes were taken from Hagen catalog, column H. P., with the exception of star 29, which was found by observation to have mg. 10.3 instead of 10.0.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 31	8976.4	12	F	$v = 42$; v 4 48	11.2	
Nov. 11	8987.4	12	F	$v = 35$; v 2 38	10.6	
Dec. 2	9008.3	12	F	23 2 v; v 2 29	10.0	
" 8	9014.4	12	F	$v = 36$	10.6	
1911						
Jan. 10	9047.3	12	F	29 2 v; $v = 38$; v 3 41	10.7	
" 17	9054.3	12	F	35 2 v; $v = 38$	10.8	
" 28	9065.3	12	F	42 2 v; v 4 48	11.4	
Oct. 16	9326.4	12	F	42 4 v; v 3 48	11.5	
" 23	9333.4	12	F	$v = 42$	11.1	
Nov. 2	9343.4	12	F	28 5 v; v 3 42	10.6	moon
" 21	9362.4	12	F	42 3 v; v 4 48	11.4	
Dec. 6	9377.3	12	F	v 1 43; $v = 42$	11.1	full moon
1912						
Jan. 25	9427.3	12	F	v between 54 and 58; very ft.	12.3 ±	moon
Oct. 18	9694.4	12	F	$v = 38$; v 1 40	10.8	
" 30	9706.4	12	F	v 1 29; $v = 28$	10.0	moon
Nov. 5	9712.4	12	F	35 1 v; v 1 38	10.7	
" 11	9718.3	12	F	$v = 29$	10.3	
" 18	9725.4	12	F	28 2 v; v 1 29	10.2	moon
" 29	9736.3	12	F	42 2 v; v 5 48	11.3	
Dec. 6	9743.3	12	F	42 5 v; v 2 48	11.6	
" 12	9749.3	12	F	42 2 v; v 5 48	11.3	

T CEPHEI 210868 IV

1855.0; α $21^h 7^m 33^s$; δ $+67° 54'.4$.

Comparison stars; Hagen numbers used and magnitudes taken from Hagen catalog, except in the case of star c, mg. 6.0, *Harvard Annals*, vol. 37, p. 10.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Oct. 30	6418.4	–	W	$v = 14$	9.1	
Nov. 3	6422.4	5	Wi	7 4 v; v 3 11	8.6	
1904						
Oct. 28	6782.4	–	W	$v = 16$	9.4	
1905						
Feb. 14	6891.4		W	$v = 3$	7.0	
Apr. 22	6958.4	5	W	v 6 3; c 2 v	6.2	
May 3	6976.4	5	W	v 7.5 3	5.5	one step = .2 mg.
1907						
June 12	7739.4	5	W	v 3 3; c 2 v	6.4	
July 19	7776.4	3	W	3 3 v; v 3 4	7.1	
Aug. 12	7800.4	3	W	$v = 7$	7.9	
" 19	7807.4	3	W	v 2 7; 6 1 v	7.8	hazy
Sept. 15	7834.4	5	W	v 5 13; 9 2 v	8.4	moon
" 26	7845.4	5	W	7 3 v; $v = 9$	8.2	
Oct. 12	7861.4	5	W	16 2 v; v 2 16	9.4	hazy

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Nov. 5	7885.4	4	W	*v* = 16	9.4	too hazy
Dec. 7	7917.4	4	W	*v* = 23	10.1	
" 24	7934.4	4	W	*v* 1 16; 16 2 *v*	9.4	
1909						
July 4	8492.4	5	W	*v* = 3; *v* = 1	6.8	
" 19	8507.4	3	W	*v* = 3	7.0	
Aug. 6	8525.4	3	W	*v* 2 3	6.8	
" 19	8538.4	3	W	*v* 2 3	6.8	
Oct. 6	8586.4	4	W	*v* 5 7; *v* = 6	7.5	
" 22	8602.4	5	W	*v* 2 7; *v* 1 6	7.6	
Nov. 6	8617.4	5	W	7 4 *v*; *v* 4 13	8.4	
Dec. 4	8645.4	5	W	16 2 *v*	9.6	
1910						
Feb. 12	8715.4	5	W	*v* 4 23; 16 3 *v*	9.7	
Mar. 5	8736.4	5	W	14 3 *v*; *v* 7 21	9.4	
Apr. 2	8764.4	3	F	*v* 2 7; *v* 4 9	7.8	finder used
" 30	8792.4	3	F	3 5 *v*; *v* 4 7	7.5	finder used

R EQUULEI 210812

$1855.0;\ \alpha\ \ 21^h\,6^m\,15^s;\ \ \delta\ \ +12°\,12'.4.$

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 268. Star y has magnitude 13.8, obtained by estimation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 29	8640.4	5	W	*v* not seen; o seen	<12.5	
" 30	8641.3	12	F	r 2.5 *v*; *v* 2 t; q 4 *v*	13.4	fine seeing
Dec. 11	8652.3	12	F	*v* = n	12.2	
1910						
Jan. 8	8680.3	12	F	*v* 3.5 k; d 7 *v*	10.1	
Oct. 4	8949.4	12	F	*v* 3 d; *v* 1.5 c	9.0	
" 26	8971.3	12	F	b 6 *v*; *v* 4 d; *v* 2 e	8.9	
Nov. 7	8983.4	12	F	*v* 2 d; *v* 3 e	9.0	
Dec. 2	9008.2	12	F	k 4 *v*; *v* 2 l; *v* 10 n	11.0	
" 8	9014.3	12	F	k 6 *v*	11.2	
1911						
Jan. 10	9047.3	12	F	*v* = n	12.2	very faint
" 17	9054.3	12	F	n 2 *v*; *v* 3 o	12.3	
Oct. 12	9322.4	12	F	*v* not seen; p, q, r, seen	<13.2	moon, poor
" 13	9323.3	12	F	y 2 *v*; u 2 *v*	14.0	
" 23	9333.4	12	F	*v* est. 14.0; y 2 *v*	14.0	*v* faint
Nov. 10	9351.4	12	F	*v* not seen; y seen	<13.8	
" 21	9362.4	12	F	*v* not seen, est. <14.2; y, seen easily	<14.2	very clear
Dec. 8	9379.3	12	F	*v* not seen; s, t, seen	<13.7	
1912						
Jan. 19	9421.3	12	F	*v* not seen; s, t, seen	<13.7	
Oct. 16	9692.4	12	F	*v* 2 t; s 1 *v*	13.5	
" 30	9706.4	12	F	m 5 *v*; n 2 *v*	12.4	moon
Nov. 5	9712.4	12	F	*v* 2 n; *v* = m	12.0	
" 18	9725.4	12	F	k 4 *v*; *v* 2 l	11.0	moon

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Nov. 29	9736.3	12	F	k 1 *v*	10.7	not v. clear
Dec. 6	9743.3	12	F	h 3 *v*; *v* 2 k	10.4	
" 16	9753.3	12	F	g 2 *v*; *v* 1 h	10.0	

RR AQUARII *210903* VI

1855.0; α $21^h\ 7^m\ 28^s$; δ $-3°\ 29'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column II. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Nov. 5	9712.4	12	F	23 1 *v*; *v* 1 25	11.8	
" 18	9725.4	12	F	*v* not seen; 20 seen	<11.1	moon
" 29	9736.3	12	F	*v* not seen; 34 seen	<13.0	
Dec. 6	9743.3	12	F	*v* not seen; 31 seen	<12.5	misty
" 12	9749.3	12	F	*v* not seen; 34 seen dimly	<13.0	low, hazy

X PEGASI 211614

1855.0; α $21^h\ 14^m\ 8^s$; δ $+13°\ 50'.3$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 269.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 29	8640.4	12	F	*v* not seen; k, l, m, seen	<11.7	moon
" 30	8641.3	12	F	*v* faint; q 3 *v*	13.8	
Dec. 10	8651.4	12	F	*v* 1 n; m 5 *v*	12.2	
1910						
Jan. 8	8680.3	12	F	*v* 1 h; f 3.5 *v*	10.9	

W CYGNI 213244 V

1855.0; α $21^h\ 30^m\ 32^s$; δ $+44°\ 43'.8$.

Comparison stars; a *Durchmusterung* map was used. The magnitudes are taken from *Annals*, vol. 50.

c: 5.4 mg.; B. D. 42° 4177;
a: 6.1 mg.; 44° 3889.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241						
Oct. 28	6416.4	——	3	W	*v* = a	6.1	
Nov. 9	6428	$9^{h}\ 30^{m}$	3	W	*v* 4 a; c 2.5 *v*	5.7	
" 10	6429	10 25	3	W	*v* 2 a	5.9	
" 14	6433	10 —	3	W	*v* 4 a; c 3.5 *v*	5.7	
Dec. 5	6454.4	——	–	W	*v* 8.5 a; c 5 *v*	5.6	
1904							
Jan. 19	6499	9 —	–	W	c 5 *v*	5.9	

S CEPHEI 213678 III

1855.0; α $21^{h}\ 36^{m}\ 57^{s}$; δ $+77°\ 58'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 198.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
May 23	6989.5	12	W	5 2 *v*; *v* 5 8; *v* = 7	9.2	
June 8	7005.4	5	W	*v* = 5	8.9	
" 14	7011.4	5	W	*v* = 4	8.7	
1906						
Mar. 5	7275.4	12	W	*v* = 18	10.8	
1909						
Jan. 28	8335.4	5	W	*v* = 15	10.5	
Mar. 18	8384.4	5	W	15 5 *v*; *v* = 18	10.9	
Apr. 16	8413.4	5	W	*v* 2 15; 8 4 *v*	10.2	
" 23	8420.4	5	W	*v* 5 15; 5 5 *v*	9.7	
May 11	8438.4	5	W	*v* = 5	8.9	
" 25	8452.4	5	W	*v* 4 4; 1 3 *v*	8.2	
June 19	8477.4	5	W	*v* 3 4; *v* 1 3	8.4	
" 28	8486.4	—	W	*v* 4 4; 1 2 *v*	8.2	
Nov. 29	8640.4	5	W	*v* 4 9; 5 7 *v*	9.6	
1910						
Feb. 12	8715.4	5	W	15 2 *v*	10.7	
Mar. 5	8736.4	5	W	15 3 *v*; 18 1 *v*	10.8	
Apr. 2	8764.4	12	F	9 4 *v*; *v* 4 15	10.2	
" 30	8792.4	12	F	*v* = 6	9.1	

SS CYGNI 213843 VI

1855.0; α $21^{h}\ 37^{m}\ 1^{s}$; δ $+42°\ 55'.3$.

Comparison stars; two sets of magnitudes were used for these. For dates 1903, Oct. 20, to 1906, Sept. 11, the letters and magnitudes were taken from the Parkhurst map in the *Astrophysical Journal*, vol. 12, p. 260. After 1906, Sept. 11, magnitudes were taken directly from a Harvard photograph.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Oct. 20	6408.47	12	W	b 5 v; v 4 c	9.0	
" 21	6409.46	12	W	b 5 v; v 5 a; v 3 c	9.0	
" 24	6412.42	12	W	c 3 v; v 2 a	9.4	
" 24	6412.42	12	W	phot. comp. with a, b, c	9.4	
" 26	6414.40	12	W	a 5 v; v 3 p; v 2 n	10.2	hazy
" 28	6416.42	12	W	v = e	10.9	
" 29	6417.42	12	W	e 3 v; p 3 v; v 2.5 m	11.0	
" 29	6417.44	12	W	phot. comp. with e and p	10.9	
" 30	6418.44	12	W	v = m	11.3	
Nov. 3	6422.42	12	W	v 1 g; v = m	11.3	moon
" 9	6428.38	12	W	v = m	11.3	
" 9	6428.38	12	W	phot. comp. with m	11.4	
" 10	6429.38	12	W	v = m	11.3	
" 18	6437.38	12	W	phot. comp. with a, b, c	8.8	
" 18	6437.45	12	W	phot. comp. with a, b, c	8.9	
" 19	6438.27	12	W	phot. comp. with a, b, c	8.7	
" 19	6438.50	12	W	phot. comp. with a, b, c	8.6	
" 20	6439.37	12	W	phot. comp. with a, b, c	8.8	
" 25	6444.35	12	W	v 2 n; v 4 p	10.2	
" 25	6444.35	12	W	phot. comp. with n and p	10.2	
" 26	6445.34	12	W	phot. comp. with n, d, p	10.8	
Dec. 5	6454.4	12	W	barely seen; v = m	11.3	moon
" 10	6459.38	12	W	phot. comp. with m	11.5	
" 14	6463.42	—	W	m 2 v; v 2 0	11.4	
" 15	6464.43	—	W	v = 0	11.6	
" 16	6465.42	—	W	v = 0; both only glimpsed	11.6	
" 17	6466.38	—	W	m 2 v; v 2 0	11.4	
1904						
Jan. 11	6491.34	—	W	v 2 m	11.1	
" 15	6495.34	—	W	v 3 m; n 4 v	11.0	
" 19	6499.34	—	W	m 3 v; v 1 o	11.6	
Oct. 1	6755.38	5	W	v = m	11.3	
" 7	6761.42	5	W	v = m	11.3	
" 10	6764.42	5	W	v = m	11.3	
" 27	6781.42	5	W	b 3 v; v 4 w	8.6	
" 28	6782.31	5	W	b 2 v; v 5 w	8.6	
" 30	6784.40	5	W	b 3 v; v 4 w	8.6	
Nov. 3	6788.31	5	W	b 4 v; v 3.5 w	8.7	
" 7	6792.42	5	W	v 3 a; e 4 v	9.4	
" 8	6793.40	5	W	v 2.5 a; e 4 v	9.4	
" 11	6796.34	5	W	d 4 v; v 4 m; p 1 v	10.8	
" 26	6811.35	5	W	v = m	11.3	
Dec. 6	6821.34	5	W	v = m	11.3	
" 8	6823.34	5	W	v = m	11.3	
1905						
June 8	7005.42	5	W	v 3 b	8.2	
" 9	7006.40	12	W	v 4.5 b; l 3 v	8.1	cloudy
" 14	7011.4	5	W	v 4 b; l 5 v	8.2	
" 25	7022.4	5	W	v = 0	11.6	
Aug. 1	7059.38	3	W	v = b	8.5	
" 1	7059.42	3	W	b 2 v	8.7	
" 5	7063.4	3	W	a 8 v; v 7 p	10.0	very hazy
" 29	7087.4	5	W	v = m	11.3	
" 31	7089.4	5	W	v = m	11.3	
Sept. 1	7090.36	5	W	v 3 m	11.0	
" 5	7094.4	5	W	v = 0	11.6	
" 20	7109.38	5	W	b 5 v; v 3 w	8.8	
" 21	7110.39	5	W	v 3 a; w 4 v	9.2	
" 22	7111.40	5	W	v = a	9.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Sept. 23	7112.35	5	W	c 3 *v*	9.6	
" 25	7114.42	12	W	*v* = d	10.6	
" 26	7115.4	5	W	p 3 *v*; *v* 5 m	10.8	
" 28	7117.4	5	W	*v* 3 m; p 5 *v*	11.0	
" 30	7119.4	5	W	*v* = m barely seen	11.3	
Oct. 4	7123.4	5	W	*v* 0.5 m	11.2	
" 16	7135.36	5	W	*v* = m barely seen	11.3	moon
" 26	7145.38	5	W	*v* = w; b 4 *v*	8.9	
" 30	7149.38	5	W	*v* = a	9.4	
1906						
June 24	7386.4	5	W	*v* = m	11.3	
" 25	7387.4	5	W	*v* = m	11.3	
" 27	7389.4	5	W	*v* = m	11.3	
July 16	7408.4	3	W	*v* = m	11.3	
Sept. 5	7459.4	3	W	b 3 *v*; *v* 2.5 a	9.0	
" 9	7463.38	5	W	a 4 *v*; *v* 8 d	9.8	
" 10	7464.38	5	W	*v* 3 d	10.3	clouds
" 11	7465.4	5	W	d 3 *v*; *v* 1 n	10.6	
Harvard map used from this point.						
Sept. 14	7468.34	5	W	*v* 2 10.9; 10.4 3 *v*	10.7	
" 15	7469.34	5	W	*v* = 10.9; 10.4 5.5 *v*	10.9	
" 16	7470.42	5	W	10.9 3 *v*; *v* 6 11.8	11.2	
" 21	7475.4	5	W	*v* = 11.8; 11.8 2 *v*	11.9	
" 24	7478.4	5	W	*v* 2 11.8; 10.9 5.5 *v*	11.5	
" 28	7482.4	5	W	*v* 2 11.8	11.6	
Oct. 2	7486.4	5	W	*v* = 11.8 both barely seen	11.8	moon, haze
" 8	7492.4	5	W	*v* 3 11.8; 10.9 5 *v*	11.4	
" 12	7496.4	5	W	*v* 5 11.8; 10.9 5 *v*	11.4	
" 13	7497.4	5	W	10.9 5 *v*; *v* 4 11.8	11.4	
" 16	7500.38	5	W	*v* = 10.9	10.9	
" 23	7507.38	—	W	*v* 5 9.6; 8.5 5 *v*; 8.9 2 *v*	9.1	
" 25	7509.4	—	W	8.5 3 *v*; *v* 8 9.4	8.7	
Nov. 1	7516.4	12	W	9.6 6 *v*; *v* 4 10.9; *v* 2 10.4	10.4	
" 2	7517.4	12	W	10.9 3 *v*; *v* = 10.9	11.0	
" 4	7519.4	—	W	*v* 4 11.8; 10.9 4 *v*	11.4	
" 5	7520.4	—	W	10.9 5 *v*; *v* 3 11.8	11.4	moon
" 6	7521.4	5	W	*v* 4 11.8; 10.9 5 *v*	11.4	
" 7	7522.4	5	W	*v* 5 11.8; 10.9 4 *v*	11.3	
" 8	7523.4	—	W	*v* 5 11.8; 10.9 4 *v*	11.3	
" 14	7529.4	5	W	10.9 5 *v*; *v* 3 11.8	11.4	
" 17	7532.4	5	W	between 10.9 and 11.8	11.4 ±	hazy
" 24	7539.4	5	W	*v* 3 10.9; *v* 2 10.9	10.6	
" 25	7540.4	5	W	*v* = 10.9	10.9	m. gibb., diff.
" 29	7544.33	5	W	*v* 1 9.4; *v* 3 9.6	9.3	
" 29	7544.37	5	W	*v* = 9.4	9.4	
Dec. 1	7546.34	5	W	*v* 4 9.4; *v* 2 8.9; 8.5 5 *v*	8.9	
" 2	7547.30	5	W	8.5 6.5 *v*; 8.5 5 *v*; *v* 1 8.9	9.0	
" 3	7548.4	5	W	8.5 5 *v*; *v* 6 9.4; *v* 2.5 8.9	8.8	
" 7	7552.4	5	W	9.4 3 *v*; *v* 2 9.6	9.6	
" 11	7556.4	5	W	*v* 2 10.9; 10.4 2 *v*	10.6	
" 18	7563.31	5	W	*v* = 11.8	11.8	
1907						
Jan. 9	7585.4	5	W	*v* 1 9.6	9.5	
Aug. 11	7799.34	3	W	*v* 3 10.9	10.6	good seeing
" 11	7799.42	3	W	*v* 5 10.9; 10.0 3 *v*	10.4	
" 12	7800.38	3	W	9.4 5 *v*; *v* 2 10.0	9.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Aug. 12	7800.44	3	W	v 2 10.0; 9.4 3 v	9.8	
“ 13	7801.38	3	W	v = 9.4	9.4	
“ 14	7802.4	3	W	8.5 3 v; v 5 9.6	9.0	
“ 15	7803.37	3	W	v 3 8.5; 8.0 3 v	8.2	
“ 18	7806.4	3	W	v 2 8.5; 8.0 4 v	8.4	
“ 19	7807.4	3	W	v = 9.6; v 3 9.6; v = 9.4	9.4	hazy
“ 20	7808.4	3	W	9.4 2 v; v = 9.4	9.5	too hazy
“ 22	7810.4	3	W	v barely seen; 10.0 seen v = 10.0 ?	10.0 ?	moon
“ 26	7814.4	3	W	v barely seen, = 11.+	11.0+	good seeing
“ 28	7816.4	3	W	v barely seen, < 11.8	<11.8	good seeing
Sept. 12	7831.4	5	W	11.8 3 v; v 1 12.1	12.0	
“ 13	7832.4	5	W	v = 12.1	12.1	good seeing
“ 15	7834.4	5	W	v not seen; 11.8 seen	<11.8	moon
“ 30	7849.4	5	W	v = 11.8	11.8	
Oct. 1	7850.4	5	W	v = 11.8	11.8	near limit
“ 5	7854.4	5	W	v 2 11.8	11.6	
“ 12	7861.4	5	W	v barely seen; < 11.0	<11.0	good seeing
“ 21	7870.42	5	W	8.5 1 v	8.6	full moon
“ 22	7871.31	--	W	v 1 8.5; 8.0 5 v	8.4	moon
“ 23	7872.32	5	W	8.5 1 v	8.6	moon
“ 24	7873.31	5	W	8.5 2 v; v 4 8.9	8.6	moon
“ 26	7875.4	5	W	8.5 1 v; v 3 8.9	8.6	moon
“ 30	7879.4	4	W	8.5 2.5 v; v 2 8.9	8.7	
“ 31	7880.4	12	W	v = 8.9	8.9	
Nov. 5	7885.4	4	W	v between 10.9 and 11.8	11.4 ±	hazy
“ 11	7891.4	4	W	v = 11.8	11.8	
“ 13	7893.4	5	W	v = 10.9	10.9	moon
Dec. 5	7915.4	4	W	v between 10.9 and 11.8	11.4 ±	hazy
“ 7	7917.34	4	W	v 1 9.6; 9.4 2 v	9.6	
“ 12	7922.4	5	W	8.5 3 v; v 5 9.4	8.8	moon
“ 24	7934.4	4	W	v barely seen; = 11.8	11.8	
1908						
Jan. 13	7954.4	4	W	v just caught; <10.9	<10.9	l., full moon
Oct. 3	8218.42	5	W	v 3 10.9; v = 10.4	10.5	
“ 5	8220.38	5	W	10.9 2 v; v 4 11.3	11.0	moon
“ 6	8221.42	5	W	v 3 10.9; v 1 10.4; v = 10.4	10.4	moon
“ 13	8228.38	5	W	9.6 1.5 v; v 2 10.0	9.8	moon
“ 14	8229.42	5	W	v 2 9.6; v = 9.4; v 1 9.4	9.4	
“ 15	8230.42	5	W	v = 9.6; v 1 9.6	9.6	
“ 16	8231.42	5	W	v 2 9.4; v = 9.4	9.3	
“ 17	8232.4	5	W	9.6 1 v	9.7	
“ 19	8234.38	5	W	9.6 5 v; v = 10.0	10.0	
“ 20	8235.34	5	W	9.6 4 v; v 1 10.0	10.0	
“ 21	8236.35	5	W	v = 10.0; 9.6 4.5 v	10.0	
“ 22	8237.42	12	W	v 3.5 10.9; 10.0 3 v	10.4	
“ 27	8242.4	5	W	v 3 10.9; v = 10.4	10.5	misty
“ 30	8245.4	5	W	v 3 10.9; 10.4 1 v	10.6	
Nov. 1	8247.38	5	W	9.6 2 v	9.8	
“ 2	8248.4	4	W	9.6 2.5 v	9.8	hazy
“ 3	8249.4	12	W	9.6 4 v; 10.0 1 v	10.0	moon, hazy
“ 4	8250.40	12	W	9.6 3.5 v; 10.0 2 v; 9.6 5 v; v 8 10.9	10.1	
“ 12	8258.31	5	W	8.2 5 v; v 1 8.9	8.9	
“ 13	8259.31	5	W	v = 8.9	8.9	
“ 15	8261.4	12	W	8.5 2.5 v; 8.5 3 v; v 4 9.4	8.8	
“ 16	8262.4	5	W	v 2 9.6; v = 9.4	9.4	
“ 20	8266.33	5	W	9.6 5 v; v 7 10.9; v = 10.0	10.1	
“ 21	8267.4	5	W	v 1 10.0; v 4 10.4	10.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Nov. 27	8273.4	5	W	v 2.5 10.9	10.6	hazy
“ 29	8275.4	5	W	10.9 2.5 v	11.1	
Dec. 1	8277.4	5	W	v 2 10.9	10.7	
“ 2	8278.4	12	W	v = 10.9	10.9	moon
“ 3	8279.4	12	W	v 2.5 10.9	10.7	m., v. misty
“ 5	8281.4	12	W	v 2 10.9	10.7	moon
“ 8	8284.4	12	W	v 3 10.9; v = 10.4	10.5	moon
“ 12	8288.4	4	W	v 3 9.4; 8.9 3 v	9.2	
“ 15	8291.4	5	W	v 2 9.4; 8.9 3 v	9.2	
“ 18	8294.4	5	W	v 5 9.4; v = 8.9; 8.5 4 v	8.9	
“ 20	8296.4	12	W	v 5 9.4; 8.5 4 v	8.9	
1909						
Jan. 1	8308.4	12	W	v 5 10.9; v 1 10.4	10.4	moon, hazy
“ 2	8309.4	12	W	v 5 10.9; 9.6 8 v; v 1 10.4	10.4	moon
“ 6	8313.4	12	W	v several steps > 10.9	>10.9	moon, hazy
“ 18	8325.4	12	W	v = 10.9	10.9	low
“ 20	8327.4	12	W	v 2 10.9	10.7	low, hazy
“ 21	8328.4	12	W	10.9 0.5 v	11.0	
July 22	8510.4	3	W	v < 11.0	<11.0	
Aug. 2	8521.4	3	W	v 2 8.5; 8.0 3 v	8.3	
“ 6	8525.4	3	W	v 3 8.5; 8.0 4 v	8.3	
“ 7	8526.4	3	W	v = 8.5	8.5	
“ 8	8527.4	3	W	8.5 5 v; v 5 9.6	9.0	
“ 10	8529.4	3	W	v = 9.4	9.4	
“ 11	8530.4	3	W	v = 10.0	10.0	
“ 13	8532.4	3	W	10.0 2 v; v 2 10.4	10.2	
“ 14	8533.4	3	W	v = 10.4	10.4	
“ 19	8538.4	3	W	v = 11.8; v barely seen	11.8	
“ 22	8541.4	3	W	v = 11.8	11.8	
“ 23	8542.4	3	W	v just caught; <11.0	<11.0	hazy
Sept. 2	8552.4	3	W	v not seen; est. <11.0	<11.0	moon
“ 3	8553.4	3	W	v = 11.8	11.8	
Oct. 7	8587.4	5	S	10.9 1 v	11.0	
“ 8	8588.4	5	S	10.9 2 v	11.1	
“ 15	8595.4	5	S	v = 9.6	9.6	
“ 18	8598.4	5	S	9.4 1 v; v 1 9.6	9.5	
“ 19	8599.4	5	S	9.4 1 v; v 1 9.6	9.5	
Nov. 1	8612.4	5	S	10.9 1 v	11.0	
“ 5	8616.4	5	S	10.9 1 v	11.0	
“ 11	8622.4	5	S	10.9 2 v	11.1	
“ 15	8626.4	5	S	v = 10.9	10.9	
“ 18	8629.4	5	S	v = 10.9	10.9	
“ 30	8641.4	5	S	10.9 2 v	11.1	
Dec. 6	8647.4	5	S	v = 8.5	8.5	
“ 8	8649.4	5	S	v = 8.6	8.6	
1910						
Jan. 10	8682.4	5	S	v = 10.9	10.9	
Nov. 11	8987.4	5	S	v = 10.9	10.9	
“ 12	8995.4	5	S	v = 10.9	10.9	

Note.—During the interval of time from 1907, July 19 to Aug. 10, the star was observed 8 times with 3 inch telescope. The record states that it was at minimum, but no definite comparisons were made.

RR PEGASI 214024

1855.0; α $21^h\,37^m\,56^s$; δ $+24°\,20'.6$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 269.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 18	8629.4	4	W	c 2 *v*; *v* 2 d	9.6	
“ 29	8640.4	5	W	*v* = c	9.4	
Dec. 4	8645.4	5	W	*v* = c	9.4	
“ 6	8647.4	5	W	c 2 *v*	9.6	
“ 8	8649.4	5	W	c 2.5 *v*	9.6	
“ 19	8660.4	5	W	d 1 *v*	9.9	
1910						
Jan. 7	8679.4	5	W	*v* = h; *v* 3 k	10.6	

V PEGASI 215605 VI

1855.0; α $21^h\,53^m\,47^s$; δ $+5°\,25'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog column H. P. Two additional faint stars were used which were later identified from the Harvard list, *Annals*, vol. 57, p. 270. Their magnitudes, however, were obtained from estimation and differ slightly from those in vol. 57.

z: 13.5 mg. Harvard n;
x: 13.8 Harvard n′.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Oct. 14	7863.4	5	W	*v* 3 15; 8 5 *v*; *v* 3 20	10.0	moon
Nov. 1	7881.4	4	W	5 2 *v*; *v* 1 6	8.6	
1909						
Aug. 26	8535.4	3	W	*v* on limit; *v* = 20	10.6	moon
Oct. 6	8586.4	5	W	*v* not seen, est. <11.0+	<11.0+	misty
“ 16	8596.4	5	W	*v* just caught, est. 12.0+	12.0+	
Nov. 5	8616.4	5	W	*v* not seen, est. <12.5; 41 seen	<12.5	
“ 6	8617.3	12	F	46 7 *v*; *v* est. 13.5–8	13.7	
“ 29	8640.4	12	F	*v* not seen; 42 faintest seen	<12.4	
“ 30	8641.3	12	F	*v* glimpsed; est. 14.2	14.2	fine seeing
Dec. 10	8651.4	12	F	*v* on extreme limit; x seen faintly	<13.8	hazy, low
1910						
Jan. 8	8680.3	12	F	*v* not seen; x faintest seen	<13.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Oct. 25	9335.4	12	F	v est. 13.2–3; v 2 z; 45 2 v v 1 46	13.1	
Nov. 10	9351.4	12	F	v = 40; v 1 41	12.1	
" 21	9362.4	12	F	15 4 v; v 1 20	10.5	
Dec. 8	9379.3	12	F	5 4 v; v 5 8	8.8	
1912						
Jan. 19	9421.3	12	F	6 6 v 1 8	9.2	
" 24	9426.3	12	F	8 2 v 2 9	9.4	
Oct. 2	9678.4	5	Wh.	8 1 v; v 4 9	9.4	
" 5	9681.4	5	Wh.	8 1 v; v 4 9	9.4	
" 8	9684.4	5	Wh.	6 2 v; v 3 8	8.9	
" 15	9691.4	5	Wh.	v 2 8; 6 2 v	9.0	
" 29	9705.4	5	Wh.	5 1 v; v 2 6	8.4	
Nov. 5	9712.4	5	Wh.	5 1 v; v 2 6	8.4	
" 12	9719.4	5	Wh.	v = 5	8.4	
" 29	9736.4	12	F	8 2 v; v 6 15	9.5	
Dec. 6	9743.3	12	F	v = 15	10.1	
" 16	9753.3	12	F	v = 23	10.7	m., v. clear

RZ PEGASI 220133b

1855.0; α 21^h 59^m 30^s; δ +32° 48′.2.

Comparison stars; a *Durchmusterung* map was used with additional faint stars. As no Harvard stars were found in the neighborhood which could be used as standards of magnitude, the scale was based on no. 22, B. D. 32° 4343, Küstner, Bonn 10, no. 9808, magnitude 8.7. The positions of 15, 17, and 25 were obtained by micrometer measurement. Star no. 26 was introduced for comparison some time after the positions of the other stars had been determined, hence its position is only approximate.

Des.	Mag.	α 1900	δ 1900	B. D.	*Leiden A. G.*
19	9.3	22^h 2^m 31^s	+33° 5′.6	32° 4340	9318
16	9.8	1 55	7.0	4337	9313
1	10.0	1 25	52.6	4334	9308
17	10.4	2 28	32 56.9	4338	
15	10.7	1 41	55.0	4336	
25	11.8	1 46	56.7		
26	12.4	1 48	59.9		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 28	8639.4	5	W	v = 15	10.7	
" 29	8640.4	5	W	v = 15	10.7	
" 30	8641.4	5	W	v 1 15	10.6	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 4	8645.4	5	W	15 3 *v*	11.0	
" 6	8647.4	5	W	15 6 *v*; *v* 6 25	11.2	glass frosty
" 8	8649.4	5	W	15 5 *v*	11.2	
" 9	8650.4	5	W	15 5 *v*	11.2	
" 19	8660.4	5	W	15 7 *v*; *v* 5 25	11.4	
1910						
Jan. 7	8679.4	5	W	25 3 *v*	12.1	
1912						
Jan. 19	9421.3	12	F	22 4 *v*; *v* 4 19	9.0	*v* very red
Feb. 6	9439.3	12	F	22 2 *v*; *v* 2 19	9.0	
" 13	9446.3	12	F	*v* 2 19; 22 4 *v*	9.1	
" 15	9448.3	12	F	19 1.5 *v* 4.5 16	9.4	
" 20	9453.3	12	F	19 3 *v*; *v* 3 16	9.6	
" 23	9456.3	12	F	19 6 *v*; *v* 4 16	9.6	
Oct. 30	9706.4	12	F	*v* = 26	12.4	
Nov. 18	9725.4	12	F	25 3 *v*; *v* 3 26	12.1	moon
" 30	9737.4	12	F	25 2 *v*; *v* 6 26	11.9	
Dec. 6	9743.4	12	F	*v* 2 25; 15 4 *v*	11.4	
" 12	9749.3	12	F	25 2 *v*; *v* 8 26	11.8	*v* quite red
" 16	9753.3	12	F	15 6 *v*; *v* 2 25	11.4	moon

T PEGASI 220412 II

1855.0; α $22^h\ 1^m\ 49^s$; δ $+11°\ 49'.9$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 270. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Oct. 25	6048.5	5	W	11 3 *v*; *v* 3 17	10.2	
Dec. 1	6085.4	5	W	*v* = 7	9.5	hazy
1904						
Oct. 13	6767.3	5	W	*v* 3 6; 3 5 *v*	8.9	
1908						
Oct. 5	8220.4	5	W	doubtful if seen; 19 seen	<11.4	moon
" 13	8228.4	5	W	*v* not seen; 23 seen	<12.0	moon
" 17	8232.4	12	W	*v* barely seen; *v* = 41	13.9	
" 27	8242.4	5	W	*v* not seen; <23	<12.0	
Nov. 16	8262.4	5	W	*v* possibly caught at limit, est. 12 ±	12.0 ±	
Dec. 5	8281.4	12	W	*v* about = 20	11.5 ±	hazy, moon
1909						
Oct. 8	8588.4	4	W	doubtful if seen; 20 seen	<11.5	
" 12	8592.4	12	F	*v* not seen; 41 and fainter seen; est. <14.2	<14.2	fine seeing
Nov. 6	8617.3	12	F	*v* faint; est. 13.8–14.0; 41 3 *v*	14.0	fine seeing
" 30	8641.3	12	F	*v* = 39	13.5	
Dec. 10	8651.4	12	F	*v* = 36	13.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Jan. 7	8679.3	12	F	v = 22; 20 2 v	11.8	
Oct. 5	8950.4	12	F	v glimpsed, est. 14.0–14.2; 41 seen	14.1	v on limit
" 29	8974.4	12	F	v, on limit, = 41	13.9	fine seeing
Nov. 11	8987.4	12	F	v very faint; v between 36 and 29, nearer 36	13.1 ±	moon
Dec. 2	9008.3	12	F	19 6 v; v 2 27	12.2	good seeing
" 8	9014.4	12	F	19 4 v; v 10 27	11.8	moon
1911						
Jan. 10	9047.3	12	F	17 1 v; v 3 19	10.9	moon
" 17	9054.3	12	F	17 1.5 v; v 4 19	10.9	
" 28	9065.3	12	F	11 1.5 v; v 4 14	10.0	
Oct. 25	9335.4	12	F	v on limit, est. 14.2	14.2	very clear
Nov. 10	9351.4	12	F	40 and 41 seen; v glimpsed, prob. 14+	14.0+	
" 21	9362.4	12	F	v = 41	13.9	
Dec. 8	9379.3	12	F	27 1 v; v = 29	12.8	v faint
1912						
Jan. 24	9426.3	12	F	19 1 v; v = 20	11.5	
Oct. 16	9692.4	12	F	v not seen, <14.2; 41 seen easily	<14.2	very clear
" 30	9706.4	12	F	v not seen; 39 faintest seen	<13.5	v. clear, m.
" 31	9707.3	12	F	v not seen; 41 faintest seen	<13.9	very clear
Nov. 11	9718.3	12	F	v not seen; 29 faintest seen	<12.9	misty
" 29	9736.4	12	F	v not seen; 41 glimpsed	<13.9	not clear
Dec. 6	9743.3	12	F	v not seen; 41 faintest seen	<13.9	
" 16	9753.3	12	F	v not seen; 36 faintest seen	<13.2	moon

Y PEGASI 220613 VI

1855.0; α $22^h\ 4^m\ 35^s$; δ $+13^\circ\ 39'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog column H. P. The magnitudes of 36 and 37, as given in *Annals*, vol. 57, p. 270, are fainter than the values given by Hagen, but the latter were retained since they seemed better in accord with visual estimates. Star 12.9 mg., in observations for Nov. 21, 1911, and Dec. 16, 1912, is taken directly from Harvard photograph of RS Pegasi.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Aug. 11	8530.4	3	W	v not seen; 19 seen	<11.1	
" 25	8544.4	3	W	v not seen; 19 seen	<11.1	moon, hazy
Sept. 17	8567.4	5	W	v not seen; 27 seen	<12.0	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Sept. 18	8568.4	12	F	*v* est. 14.0	14.0	very clear
Oct. 5	8585.4	12	F	*v* = 36	13.0	clear
" 15	8595.4	12	F	*v* 4 35; 27 4 *v*; *v* = 32	12.4	
Nov. 6	8617.3	12	F	17 2 *v*; *v* 1 19	11.0	
" 29	8640.4	12	F	*v* 1 17; 15 2 *v*	10.8	
Dec. 10	8651.4	12	F	17 3 *v*; *v* 2 19	11.0	
1910						
Jan. 7	8679.3	12	F	36 1 *v*; *v* 1 37	13.1	
Oct. 5	8950.4	12	F	*v* est. 13.8 or 14.0; 36, 37, easy	13.9	
" 29	8974.4	12	F	*v* est. 13.8 +; 36, 37, seen	13.8+	fine seeing
Nov. 11	8987.4	12	F	*v* not seen, or on limit; 36, 37 seen	<13.2	moon
Dec. 2	9008.3	12	F	*v* 4 36; *v* = 32	12.5	good seeing
" 8	9014.4	12	F	19 8 *v*; 27 2 *v*	12.0	faint, moon
1911						
Jan. 10	9047.3	12	F	*v* 2 15; *v* 6 17	10.4	moon
" 17	9054.3	12	F	8 4 *v*; *v* 6 17	10.2	
" 28	9065.3	12	F	17 1 *v*; *v* 2 19	10.9	
Nov. 10	9351.4	12	F	*v* glimpsed occasionally; 36 4.5 *v*	13.4	36 and 37 easy
" 10	9351.4	5	S	*v* not seen; 28 seen	<12.1	field easy
" 21	9362.4	12	F	*v* not seen; 12.9 seen	<12.9	
Dec. 8	9379.3	12	F	*v* not seen; 36 and 37 seen	<13.2	
" 13	9384.3	12	F	*v* glimpsed, est. 14.0; 36 and 37 seen	14.0	very clear
1912						
Jan. 24	9426.3	12	F	*v* about = 32	12.4±	faint, moon
Oct. 16	9692.4	12	F	30 1 *v*; *v* 2 32	12.2	
" 29	9705.4	12	F	*v* not seen, < 32	<12.4	
Nov. 5	9712.4	12	F	*v*, faint, = 37	13.2	good seeing
" 29	9736.4	12	F	*v* not seen; 37 faintest seen	<13.2	
Dec. 6	9743.4	12	F	*v* not seen; 12.9 faintest seen	<12.9	
" 16	9753.3	12	F	*v* not seen; 36 seen	<13.0	m., v. clear

RS PEGASI 220714 VI

1855.0; α $22^h\ 5^m\ 13^s$; δ $+13^\circ\ 50'.4$.

Comparison stars; magnitudes taken directly from a Harvard photograph, on map with Y Pegasi.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Jan. 10	9047.3	12	F	*v* not seen; 12.5 seen	<12.5	
" 17	9054.3	12	F	*v* est. 1 mg. < 12.9	13.9	*v* on limit
" 28	9065.3	12	F	12.9 3 *v*	13.2	l., im. blurry

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Nov. 10	9351.4	12	F	12.5 2 v; v 2 12.9	12.7	
" 21	9362.4	12	F	12.5 3 v; v 1 12.9	12.8	
Dec. 8	9379.3	12	F	12.9 2 v	13.1	
" 13	9384.4	12	F	12.9 3 v; $v = 13.2$	13.2	
1912						
Jan. 24	9426.3	12	F	v not seen; 12.5 and 12.9 seen	<12.9	
Oct. 16	9692.4	12	F	$v = 12.1$	12.1	
" 29	9705.4	12	F	v 2 12.0; 11.3 5 v	11.8	
Nov. 5	9712.4	12	F	v 2 12.5; 12.0 3 v	12.3	
" 29	9736.4	12	F	$v = 12.5$	12.5	not clear
Dec. 6	9743.4	12	F	12.5 2 v	12.7	
" 16	9753.3	12	F	12.5 2 v; v 3 12.9	12.6	m., v. clear

X AQUARII *221321* VI

1855.0; α $22^h 10^m 40^s$; δ $-21° 37'.4$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 29	8974.4	12	F	v 2 14; v 2 16	9.7	
Nov. 11	8987.4	12	F	5 3 v; $v = 6$	8.8	near moon
Dec. 2	9008.3	12	F	v 2 5; 2 8 v	8.2	
1911						
Jan. 17	9054.3	12	F	v 2 14; 8 6 v	9.4	low
Nov. 7	9348.4	5	S	5 2 v; v 1 8	8.8	
" 16	9357.4	5	S	5 3 v; $v = 8$	8.8	
" 21	9362.4	5	S	5 3 v; v 8 18	9.4	

RV PEGASI 222129

1855.0; α $22^h 18^m 58^s$; δ $+29° 44'.3$.

Comparison stars; a *Durchmusterung* map was used with additional stars. This was later compared with the Harvard list in *Annals*, vol. 57, p. 271, and with a photograph by Wolf in *A. N.* 3977, p. 267. Recently a Harvard photograph was obtained and all of the stars used were identified on it. All but two of the stars, α and β, had Harvard magnitudes which were in general adopted. The letters designating the stars were taken from vol. 57. The positions of the additional stars were measured with the micrometer. One of them, β, differs slightly from a Harvard star, l, with which it seems to be identical. One difference in magnitude was found, star g having mag. 11.3 instead of 10.5. b and d in the following table are Harvard stars, but their positions differ slightly from those given in *Annals*, vol. 57.

Des.	Mag.	α 1900			δ 1900		Remarks
b	8.7	22^h	20^m	19^s	+29°	58′.6	Cambr. A. G. 13423
d	9.0		21	19		59.2	13435
α	10.8		21	18	30	0.2	
β	11.0		21	27	29	58.0	Harvard 1 ?

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Nov. 18	7168.4	5	W	*v* on limit; o seen	<12.0	
Dec. 14	7194.4	12	W	*v* not seen, or barely seen, est. <12.0	<12.0	moon
1906						
Oct. 12	7496.4	12	W	*v* 4 h; e 5 *v*	10.2	
Nov. 1	7516.4	12	W	*v* 2.5 m; *v* 0.5 h	11.0	
Dec. 11	7556.4	5	W	*v*, just caught, est. <12.0	<12.0	
1907						
Jan. 11	7587.4	12	W	*v*, near limit, est. 12.5	12.5	
" 21	7597.4	12	W	*v* not seen, est. <12.5	<12.5	
1908						
Oct. 21	8236.4	5	W	*v* = d	9.0	
" 27	8242.4	5	W	d 3 *v*; b 2 *v*; *v* = e	9.2	
Nov. 16	8262.4	5	W	*v* 7 h; e 7 *v*	10.2	
" 29	8275.4	5	W	*v* = f	10.0	
Dec. 8	8284.4	12	W	e 8 *v*; *v* 4 h; *v* 3 α	10.4	
1909						
Jan. 21	8328.4	12	W	h 2 *v*; *v* 2 m	11.2	
Oct. 8	8588.4	5	W	*v* not seen; m seen	<11.4	misty
" 15	8595.4	12	F	*v* 2 m; β 7 *v*	11.4	
Nov. 6	8617.3	12	F	b 2 *v* 1 d	8.9	*v* red
" 29	8640.4	5	W	a 2 *v*; *v* 1 d	8.9	
Dec. 8	8649.4	5	W	a 1 *v*	8.8	
1910						
Jan. 7	8679.4	5	W	e 5 *v*; *v* = f	10.0	
1912						
Jan. 24	9426.3	12	F	d 3 *v*; *v* 2 e	9.2	
Feb. 15	9448.3	12	F	*v* 3 α; *v* 3 h	10.6	
Oct. 30	9706.4	12	F	r 4 *v*; *v* est. 13.0	13.0	moon
Dec. 16	9753.4	12	F	r 2 *v*; *v* 2 s	12.6	m., v. clear

S LACERTAE 222439 III

1855.0; α $22^h\ 22^m\ 40^s$; δ $+39°\ 33'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 272. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Sept. 22	6380.4	12	W	5 5 v; v 3 15	9.0	
1904						
Jan. 11	6491.3	12	W	phot. comp. with 42	10.7	
Oct. 28	6782.3	5	W	v = 50	11.2	
Dec. 6	6821.3		W	39 2 v; v = 50	11.0	barely seen
1905						
Jan. 14	6860.3	5	W	15 4 v; 26 1 v	10.0	
" 28	6874.3	12	W	v = 7	8.8	
Feb. 11	6888.3	12	W	v = 5	8.3	
" 24	6901.3	12	W	5 4 v; v 4 8	8.6	low, poor
1906						
Oct. 25	7509.4	5	W	v not seen; 50 seen	<11.2	
Nov. 8	7523.4	—	W	50 5+ v	11.7+	on limit
" 29	7544.4	5	W	doubtful if seen; 50 seen	<11.2	full moon
Dec. 7	7552.4	5	W	v = 63	11.7	just caught
1907						
Jan. 9	7585.4	5	W	26 4 v; v 1 31	10.4	
" 26	7602.4	12	W	v = 8; v 3 11	8.8	
Oct. 18	7867.4	5	W	5 1 v; v 5.5 8	8.4	bright moon
Nov. 4	7884.4	4	W	5 3 v; v 4 9	8.6	
1909						
Aug. 10	8529.4	3	W	v 5 26; v = 18	9.6	
" 22	8541.4	3	W	v 6 26; v = 19	9.6	
Sept. 5	8555.4	3	W	5 3 v; v 4 9	8.6	
" 18	8568.4	5	W	v 3 5; v 1 3	8.0	
Oct. 7	8587.4	5	W	5 1 v	8.4	
" 22	8602.4	5	W	5 3 v; v = 6	8.6	
Nov. 6	8617.4	5	W	v 8 26; v 1 11	9.2	
" 27	8638.4	5	W	26 3 v; v 3 31	10.2	
Dec. 8	8649.4	5	W	v 1.5 31	10.2	
1911						
Jan. 5	9042.3	12	F	v = 40	10.8	
" 17	9054.3	12	F	v 2 26; v = 18	9.7	
" 24	9061.3	12	F	v = 19	9.6	
Feb. 15	9083.3	12	F	11 2 v; v 3 15	9.2	
" 21	9089.3	12	F	11 4 v; v 2 15	9.4	
Nov. 27	9368.3	12	F	v = 22; v 2 24	9.8	
Dec. 8	9379.3	12	F	26 4 v; v 2 40	10.6	
1912						
Jan. 16	9418.4	12	F	v = 77; v 1 78	12.4	
Feb. 6	9439.3	12	F	v = 81	13.0	

δ CEPHEI 222557 V

1855.0; α $22^h 23^m 48^s$; δ $+57° 40'.4$.

Comparison stars; Schurig's map used, magnitudes taken from *Annals*, vol. 50.

7 Lacertae,	3.8 mg.	ξ Cephei,	4.4 mg.
ϵ Cephei,	4.2	ι Cephei,	3.7
ζ Cephei,	3.6		

The record does not in general state whether observations were made with opera glasses or with naked eye.

Date	J. D.	Hr.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Nov. 2	7152	9^h $—^m$	W	$v = \epsilon$	4.2	
" 10	7160	10 —	W	ζ 3 v; v 5 ϵ; v 3 7 Lac.	3.7	
" 18	7168	8 30	W	$v = \xi$	4.4	
" 18	7168	10 25	W	$v = \epsilon$	4.2	
" 21	7171	7 30	W	ϵ 5 v; v 3 ξ	4.4	
" 21	7171	11 10	W	v 3.5 ϵ; ζ 2 v	3.8	opera glass
" 23	7173	9 25	W	ϵ 1 v; v 2 ξ	4.2	
" 25	7175	7 40	W	v 1 ζ	3.5	
" 25	7175	11 —	W	ζ 2 v	3.8	
" 27	7177	7 10	W	v 3 ϵ; ζ 8 v; 7 Lac. 2 v	4.1	
" 30	7180	7 30	W	ζ 2 v; $v = \iota$	3.8	
Dec. 5	7185	8 30	W	ζ 4 v; v 8 ϵ	3.7	
" 16	7196	9 18	W	$v = \zeta$	3.6	
1906						
Jan. 4	7215	8 10	W	ζ 6 v; v 5 ϵ	4.0	
" 17	7228	8 50	W	ζ 3 v; v 7 ϵ	3.7	
" 18	7229	7 15	W	ζ 2 v; v 4 7 Lac.; v 8 ϵ	3.5	
" 22	7233	9 10	W	ζ 5 v; v 3 ϵ	4.0	
" 29	7240	10 15	W	ζ 3 v; v 8 ϵ	3.6	
Feb. 6	7248	8 5	W	ζ 6 v; v 2 ϵ	4.1	

NOVA LACERTAE 223152

1855.0; α $22^h 29^m 56^s$; δ $+51° 58'.0$.

Comparison stars; a *Durchmusterung* map was used. Only one of the comparison stars was found to have a Harvard photometric magnitude, b, B. D. 51° 3396, 6.6 mg., *Annals*, vol. 54. The magnitudes of the other stars were found by comparison with this. They are as follows:

b:	6.6 mg.,	B. D. 51° 3396
c:	7.6	3395
a:	8.3	3420
e:	8.6	3414
d:	8.8	3415

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241						
Jan. 4	9041	8^h 0^m	12	F	b 6 v; v est. 7.5	7.4	quite red
" 4	9041	——	12	S	b 8 v; v 8 a	7.4	
" 5	9042	7 45	12	F	b 6 v 10 a	7.2	
" 5	9042	——	12	S	v 6 a; b 12 v	7.7	
" 9	9046	——	12	S	v 5 a; b 12 v	7.8	
" 10	9047	8 17	12	F	v 2 c; v 8 a	7.4	
" 16	9053	7 0	12	F	v 1 c	7.5	reddish
" 17	9054	8 15	12	F	v = c; v 8 a	7.6	
" 24	9061	8 0	12	F	c 2 v; v 5 a	7.8	
" 28	9065	7 30	12	F	v 4 a; c 3 v	7.9	yellowish

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241						
Feb. 11	9079	—$^{\text{h}}$ —$^{\text{m}}$	12	F	a 2 *v*	8.5	
" 15	9083	7 30	12	F	a 2 *v*; *v* 2 d	8.6	
" 21	9089	7 15	12	F	a 4 *v*; *v* 2 d	8.6	
Mar. 2	9098	9 40	12	F	a 2 *v*; *v* 4 e	8.3	

R LACERTAE 223841 III

1855.0; α $22^{\text{h}}\,36^{\text{m}}\,50^{\text{s}}$; δ $+41°\,36'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 272. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1903	241					
Sept. 22	6380.4	12	W	9 2 *v*; *v* 2 14	9.4	
Dec. 10	6459.4	12	W	*v* on limit; <64	<12.8	
1904						
Sept. 26	6750.4	5	W	*v* not seen; est. 11 ±	11 ±	moon, misty
Oct. 28	6782.4	5	W	*v* barely seen; est. 11 ±	11 ±	good seeing
Nov. 26	6811.4	—	W	*v* not seen; est. 11 ±	11 ±	moon
1906						
Oct. 25	7509.4	5	W	*v* = 30	10.7	
Nov. 8	7523.4	—	W	15 3 *v*; *v* 4 23	9.8	
" 29	7544.4	5	W	*v* 1 15; *v* = 14	9.6	
Dec. 7	7552.4	5	W	*v* = 15	9.7	
1907						
Jan. 9	7585.4	5	W	23 2 *v*	10.3	
" 23	7599.4	12	W	30 1 *v*; 26 4 *v*; *v* 2 37	10.9	
1910						
Nov. 19	8995.4	12	F	*v* = 23	10.1	moon
Dec. 8	9014.4	12	F	9 4 *v*; *v* 2 15	9.5	moon
1911						
Jan. 5	9042.3	12	F	*v* = 9	9.1	
" 17	9054.3	12	F	9 1.5 *v*; *v* 3 15	9.3	
" 24	9061.3	12	F	9 4 *v*; *v* 2 15	9.5	
Feb. 15	9083.3	12	F	*v* 1.5 30; 26 5 *v*	10.7	
" 21	9089.3	12	F	*v* = 30	10.7	
Nov. 27	9368.3	12	F	*v* = 14; *v* 1 15	9.6	
Dec. 8	9379.3	12	F	18 1 *v*; *v* 1 23	10.0	
1912						
Jan. 6	9418.4	12	F	*v* = 64	12.8	
Feb. 6	9439.3	12	F	*v* = 73	13.3	both faint

S AQUARII *225120* I

1855.0; α $22^{\text{h}}\,49^{\text{m}}\,20^{\text{s}}$; δ $-21°\,7'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 29	8974.3	12	F	*v* 4 23; 21 2 *v*	12.2	
Nov. 11	8987.4	12	F	too near moon for observation; 11 seen plainly, 19 with difficulty	<11.7	
1911						
Jan. 17	9054.3	12	F	27 4 *v*, *v* on limit	13.6	
Oct. 16	9326.3	12	F	27 6 *v*, *v* very faint	13.8	
" 23	9333.4	12	F	27 6 *v*, *v* faint	13.8	on merid.
Nov. 10	9351.4	12	F	22 2 *v*; *v* 3 24	12.6	
" 22	9363.3	12	F	21 3 *v*; *v* 5 24	12.3	
Dec. 6	9377.3	12	F	*v* about = 21	12.0	ft. in moon
" 8	9379.3	12	F	21 2 *v*; *v* 4 23	12.2	
1912						
Jan. 16	9418.3	12	F	3 1 *v*; *v* 1 4	8.5	
Oct. 31	9707.3	12	F	4 5 *v*; *v* 8 6	9.1	
Nov. 18	9725.4	12	F	*v* = 5	9.1	moon
" 30	9737.4	12	F	5 3 *v*; *v* 8 8	9.4	

RW PEGASI 225914

1855.0; α $22^h 56^m 59^s$; δ $+14° 31'.4$.

Comparison stars; letters and magnitudes taken from *Annals*, vol. 57, p. 272. Stars q and r have magnitude 13.4 obtained by estimation.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Nov. 14	8625.4	12	W	*v* = o	13.2	
" 15	8626.4	5	W	*v* = o	13.2	
" 30	8641.3	12	F	*v* = r	13.4	ft., moon
Dec. 11	8652.3	12	F	*v* not seen; o, p, q, r, seen	<13.4	
1910						
Jan. 7	8679.4	12	F	*v* not seen; p, q, o, r, seen	<13.4	
Feb. 2	8705.3	12	F	*v* not seen; k and l faintest seen	<12.1	misty
" 4	8707.4	12	F	o 1 *v*; *v* 2 q	13.2	*v* easy
" 7	8710.4	12	F	*v* about = o	13.2	
" 10	8713.3	12	F	*v* 1.5 o	13.0	
Oct. 5	8950.4	12	F	*v* 4 g; *v* = e	10.8	
" 29	8974.3	12	F	*v* 2 b	9.7	
Nov. 11	8987.4	12	F	*v* = b; *v* 2 e	9.6	
" 19	8995.4	12	F	*v* = b	9.9	
Dec. 2	9008.3	12	F	*v* 4 g; *v* 6 k	11.0	
" 8	9014.4	12	F	*v* 7 g; *v* = h	10.8	moon
1911						
Jan. 10	9047.3	12	F	l 3 *v*; *v* = m	12.4	moon
" 17	9054.3	12	F	*v* 2 o; *v* 5 p	13.0	
" 28	9065.3	12	F	o 1 *v*; *v* 1 r	13.3	
Oct. 25	9335.4	12	F	l 2 *v*	12.3	
Nov. 10	9351.4	12	F	*v* 2 g; *v* 5 k	11.1	
" 21	9362.4	12	F	b 2 *v*; *v* 10 g	10.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Dec. 8	9379.3	12	F	*v* not seen; p seen clearly	<13.4	
" 13	9384.3	12	F	*v* not seen; p and q seen	<13.4	
1912						
Jan. 19	9421.4	12	F	b 2 *v*; *v* 4 f	10.1	
" 24	9426.3	12	F	b 5 *v*; *v* 4 e	10.4	
Feb. 6	9439.3	12	F	e 3 *v*; *v* 1 g	11.1	
" 13	9446.3	12	F	*v* = k	11.7	low
Oct. 16	9692.4	12	F	m 4 *v*; *v* 2 p	13.0	very clear
" 29	9705.4	12	F	*v* not seen; o glimpsed	<13.2	misty
" 31	9707.4	12	F	r 6 *v*; *v* est. 14.0	14.0	very clear
Nov. 11	9718.3	12	F	*v* not seen; r faintest seen	<13.4	misty
" 30	9737.4	12	F	r 4 *v*; *v* est. 13.8	13.8	
Dec. 6	9743.4	12	F	o 2 *v*; both faint	13.4	
" 16	9753.3	12	F	l 8 *v*; *v* 3 o	12.9	m., v. clear

Note.—The two observations of 1911, Dec. 8 and 13, are quite discordant with the other observations made during the same period, but as there is nothing in the original record to indicate an error they are allowed to stand. It is unlikely that the observations belong to another star, because all of the other variables in that region of the sky having comparison stars o, p, q, are otherwise accounted for.

R PEGASI 230110 II

1855.0; α $22^h\ 59^m\ 22^s$; δ $+9°\ 45'.7$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals,* vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Dec. 1	6085.4	5	W	*v* = 13	10.7	
1904						
Sept. 30	6754.3	5	W	*v* 5 4; 2 8 *v*	8.2	
1906						
Aug. 17	7440.4	3	W	*v* 3 3; 2 5 *v*	7.8	
Sept. 9	7463.4	5	W	2 1 *v*; *v* 7 3	7.4	
Oct. 13	7497.4	5	W	*v* 4 3; 2 3 *v*	7.7	
Nov. 5	7520.4	12	W	*v* 1 4; 3 2 *v*	8.5	
1907						
Oct. 18	7867.4	5	W	*v* 3 4; 3 1 *v*	8.4	
1909						
Oct. 6	8586.4	5	R	2 4 *v*; *v* 3 3	7.8	
" 12	8592.4	5	R	2 4 *v*; *v* 3 3	7.8	
" 25	8605.4	5	W	2 4 *v*	7.7	moon
" 26	8606.4	5	W	*v* 3 3; 2 5 *v*	7.8	
Nov. 9	8620.4	5	R	*v* = 3; 4 3 *v*	8.6	
" 18	8629.4	5	W	*v* 8 9; 5 2 *v*	9.4	
" 29	8640.4	5	W	6 2 *v*; *v* 3 7	9.5	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Dec. 8	8649.4	5	W	*v* 2 9	9.9	
" 19	8660.4	5	W	*v* 4 9; *v* = 7	9.7	
1910						
Jan. 8	8680.4	5	W	*v* 1 13	10.6	
Oct. 5	8950.4	5	S	2 3 *v*; *v* 5 3	7.6	
" 21	8966.4	5	S	2 2 *v*; *v* 8 3	7.4	
" 26	8971.4	5	S	*v* = 2 = 1	7.3	
Nov. 19	8995.4	5	S	2 4 *v*; *v* 7 3	7.6	
Dec. 8	9014.4	5	S	3 3 *v*; *v* 2 4	8.5	moon
1911						
Jan. 4	9041.4	5	S	*v* 4 9	9.7	very low
" 28	9065.3	12	F	*v* 6 13; 9 6 *v*	10.4	
Feb. 16	9084.3	12	F	*v* about = 13	10.7 ±	l., very diff.
Nov. 10	9351.4	5	S	4 4 *v*; *v* 4 6	9.0	
" 16	9357.4	5	S	5 2 *v*; *v* 2 9	9.7	
Dec. 19	9390.4	5	S	*v* = 9; *v* 1 13	10.4	
1912						
Feb. 8	9441.3	12	F	13 2 *v*; *v* 5 17	10.9	low

V CASSIOPEIAE 230759 VI

1855.0; α $23^h 5^m 27^s$; δ $+58° 53'.8$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog column H. P., except for star no. 4, mg. 7.4, *Annals*, vol. 54. Two additional stars were used, q, and k; q = B. D. 59° 2660 = Harvard c, mg. 8.2 *Annals*, vol. 57, p. 272; k = B. D. 58° 2563, mg. 7.8, determined by estimation from comparison with stars 4 and 7.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Mar. 11	6916.4	12	W	phot. comp. with 5 and k	7.5	
Aug. 22	7080.4	3	W	*v* barely seen; est. <10.0	<10.0	
Sept. 26	7115.4	12	W	15 2 *v*	9.7	
Oct. 17	7136.4	5	W	*v* 2 10; 5 7 *v*	8.9	
Nov. 18	7168.4	5	W	5 3 *v*; *v* 5 k	8.0	
1906						
Mar. 31	7301.4	5	W	*v* est. 12.5 or 13.0	12.8	
July 25	7417.4	3	W	*v* = 10	9.0	
Oct. 16	7500.4	5	W	*v* est. 12.0+	12.0+	on limit
Nov. 14	7529.4	5	W	*v* uncertain; est. 12.5 ±	12.5 ±	
1907						
Jan. 30	7606.4	3	W	*v* 1 4	7.3	
" 30	7606.4	12	W	4 3 *v*	7.7	
Mar. 11	7646.4	12	W	*v* = q	8.2	
" 11	7646.4	3	W	q 2 *v*	8.4	
Aug. 8	7796.4	3	W	*v* = 15	9.5	
Oct. 1	7850.4	5	W	5 3 *v*; *v* 6 20	8.8	
1908						
Jan. 22	7963.4	5	W	*v* = 65; 65 3 *v*; *v* est. 12.5	12.1	
Feb. 4	7976.4	12	W	*v* = 51; *v* 2 65	11.4	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Mar. 3	8004.4	—	W	*v* 3 34; 13 6 *v*	10.0	
" 16	8017.4	12	W	*v* 4 15; *v* 7.5 13; 7 2 *v*	8.8	
" 25	8026.4	12	W	*v* 2.5 7; 5 5 *v*	8.6	
1909						
Aug. 14	8533.4	3	W	4 3 *v*; *v* 4 5	7.8	
" 23	8542.4	3	W	*v* 2 5; 4 4 *v*	8.0	
Sept. 17	8567.4	5	W	*v* 4 13; 7 5 *v*	9.0	
Oct. 7	8587.4	5	W	*v* = 51	11.2	misty, faint
" 22	8602.4	5	W	*v* = 51	11.2	
" 31	8611.4	5	W	*v* on limit if seen; 51 seen	<11.2	
Nov. 6	8617.4	5	W	*v* est. 12.0+	12.0+	on limit
Dec. 4	8645.4	5	W	*v* not seen; est. <11.5	<11.5	
" 10	8651.4	12	F	75 1.5 *v*; 74 3 *v*	12.6	
1910						
Jan. 7	8679.4	12	F	*v* 2.5 51; 49 = *v*	11.0	
Feb. 1	8704.4	12	F	*v* = 22; 19 2 *v*	9.9	
" 10	8713.4	12	F	13 2 *v*; *v* 2 22	9.6	
" 25	8728.3	12	F	*v* = 7; 5 3.5 *v*	8.6	
Mar. 26	8757.3	12	F	*v* 2 5; 4 5 *v*	8.0	
Apr. 10	8772.3	12	F	5 5 *v*; *v* 2 7	8.6	low
1911						
Feb. 21	9089.3	12	F	69 2 *v*; *v* 3 73	12.1	
Apr. 18	9145.4	12	F	*v* = 22	9.9	
May 26	9183.4	12	F	3 8 *v*; *v* 10 5	7.2	very low
1912						
Apr. 10	9503.4	12	F	43 1 *v*; *v* 2 52	11.0	

W PEGASI 231425 IV

1855.0; α $23^h 12^m 34^s$; δ $+25° 29'.2$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Aug. 13	8532.4	3	W	*v* = 16	10.4	
" 25	8544.4	–	W	14 3 *v*; *v* 2 16	10.4	
Oct. 6	8586.4	5	S	14 2 *v*; *v* 2 16	10.3	
" 12	8592.4	5	S	10 1 *v*; *v* 4 14	9.8	
" 19	8599.4	5	S	3 4 *v*; *v* 3 7	8.5	
" 25	8605.4	5	W	*v* 2 3	7.8	
Nov. 1	8612.4	5	S	1 8 *v*; *v* 4 3	7.4	
" 6	8617.4	5	W	*v* 4 3	7.6	
" 11	8622.4	5	S	3 1 *v*; *v* 2 5	8.2	
" 29	8640.4	5	W	3 4 *v*; *v* 1 7	8.6	
Dec. 8	8649.4	5	W	9 1 *v*; 3 8 *v*.	9.0	
" 19	8660.4	5	W	3 6 *v*; 7 1 *v*	8.8	
1910						
Jan. 7	8679.4	5	W	*v* 5 14; 9 10 *v*	10.0	
Nov. 11	8987.4	5	S	3 4 *v*; *v* 2 7	8.6	moon
" 19	8995.4	5	S	9 3 *v*; *v* 5 10	9.4	
Dec. 8	9014.4	5	S	10 2 *v*; *v* 3 14	9.9	moon

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1911	241					
Jan. 5	9042.4	5	S	*v* = 16	10.4	
1912						
Jan. 19	9421.4	12	F	*v* = 28	11.8	

S PEGASI 231508 II

1855.0; α $23^h\,13^m\,13^s$; δ $+8°\,7'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1902	241					
Dec. 1	6085.4	5	W	16 2 *v*; *v* 5 19	11.6	
1903						
Sept. 22	6380.4	12	W	*v* = 19	12.1	
1904						
Sept. 30	6754.4	5	W	8 4 *v*; *v* 3 25	11.4	
Oct. 7	6761.5	5	W	8 6 *v*; *v* = 15	11.0	
" 15	6769.4	5	Wi	*v* 3 16; *v* 2 15; 8 5 *v*	10.9	
" 27	6781.4	5	Wi	*v* 4 15; 8 3 *v*	10.6	
Nov. 14	6799.4	5	Wi	*v* 5 8	9.6	
" 21	6806.4	5	Wi	*v* 4 5; 2 6 *v*	8.6	
" 26	6811.4	5	W	*v* 3 3; 2 6 *v*	8.5	
" 30	6815.4	5	Wi	*v* 3 5; 2 10 *v*	8.9	
Dec. 8	6823.3	5	W	*v* 6 5; *v* 3 3; 2 10 *v*	8.7	
" 21	6836.3	—	W	*v* 3 4; *v* 0.5 3	8.8	
1907						
Oct. 18	7867.4	5	W	*v* not seen; 8 seen	<10.1	*v* near moon
1909						
Oct. 12	8592.4	12	F	*v* = 30; *v* = 31	13.1	faint
Nov. 6	8617.3	12	F	*v* = 31; *v* 1 31; *v* = 30	13.0	
" 30	8641.3	12	F	*v* = 23	12.4	
Dec. 11	8652.4	12	F	*v* 1.5 19; *v* 2.5 20	11.9	
1910						
Jan. 7	8679.4	12	F	18 6 *v*; *v* 2 19	12.2	
Feb. 2	8705.3	12	F	*v* 2.5 15; 10 5.5 *v*	11.0	
" 4	8707.4	12	F	*v* 3.5 15; 12 1.5 *v*	10.8	
" 7	8710.4	12	F	*v* 2 10; 8 4 *v*	10.4	poor images
" 10	8713.3	12	F	7 2 *v*; *v* = 9	10.2	
Oct. 29	8974.3	12	F	*v* 8 19; 15 2 *v*	11.4	
Nov. 11	8987.4	12	F	*v* 3 15; 12 = *v*	10.8	
Dec. 2	9008.3	12	F	7 6 *v*; *v* 4 15	10.7	
" 8	9014.4	12	F	*v* = 7	10.0	moon
1911						
Jan. 10	9047.3	12	F	too bright for 12 in.; *v* > 5	> 9.3	
" 28	9065.3	3	F	*v* 2 2; 1 2 *v*	7.6	finder used
Feb. 16	9084.3	12	F	*v* about = 2	7.8 ±	poor
Oct. 23	9333.4	5	S	5 1 *v*; *v* 4 8	9.6	
Nov. 7	9348.4	5	S	5 1 *v*; *v* 3 8	9.6	
" 18	9359.4	5	S	4 = *v*; *v* 1 5	9.0	
Dec. 19	9390.4	5	S	2 = *v*; *v* 8 5	8.2	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1912	241					
Jan. 24	9426.4	5	S	2 4 v; v 8 5	8.4	
Feb. 8	9441.3	12	F	v = 4; v 6 5	8.8	

RS CASSIOPEIAE 233261

1855.0; α $23^h 30^m 29^s$; δ $+61° 37'.7$.

Comparison stars; a *Durchmusterung* map was used with additional stars. This was later compared with a Harvard photograph and three stars, e, d, and l, were identified as common to both. The magnitudes were obtained by comparison with these, and the positions of the stars not in the B. D. map were measured from the photograph.

Des.	Mg.	α 1900			δ 1900		B. D.		*A. G. Hels. Goth a.*
b	9.4	23^h	32^m	24^s	+61°	46′.2	61°	2486	14199
d	9.9		30	13		52.6		2476	
h	10.0		30	50		44.7		2481	14184
e	10.2		30	27		55.8		2476	
l	10.4		33	8		41.7			
k	10.6		30	54		50.4			
c	10.7		30	17		53.5		2477	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Jan. 28	6874.38	12	W	phot. comp. with e and d	10.3	
Feb. 7	6884.38	12	W	v = e	10.2	
" 7	6884.38	12	W	phot. comp. with c, d, e	10.0	
Mar. 1	6906.33		W	v 2 e; v = d	10.0	
" 11	6916.42	12	W	b 3 v	9.7	
" 11	6916.42	12	W	phot. comp. with b	9.8	
" 23	6928.33	12	W	v 3 e; d 2 v	10.2	
" 23	6928.33	12	W	phot. comp. with b and d	10.1	
Apr. 2	6938.31	12	W	v = e	10.2	
" 2	6938.31	12	W	phot. comp. with e	10.2	
Aug. 22	7080.4	3	W	b 8 v; v 5 d	9.8	
Sept. 23	7112.36	5	W	v = d	9.9	
Oct. 16	7135.35	—	W	v 3 e; e 4 v	10.5	
" 28	7147.36	12	W	v between c and e	10.4 ±	misty
Nov. 25	7175.44	12	W	b 4 v; v 3 d	9.7	
Dec. 14	7194.4	12	W	v 1 d; b 8 v	10.0	
1906						
Jan. 26	7237.4	12	W	b 3 v; v 2 d	9.7	
Feb. 24	7266.4		W	d 5 v 5 c	10.3	
Mar. 24	7294.4	12	W	v 3 b	9.1	
" 24	7294.4	12	W	phot. comp. with b	9.5	
Sept. 25	7479.4	5	W	b 3 v; v 1 c	9.9	
Nov. 1	7516.4	12	W	b 2 v; v 2 d	9.6	
" 24	7539.4	5	W	v 1 d; b 5 v; v 2 h	9.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1906	241					
Dec. 7	7552.4	5	W	*v* = d; *v* 2 h	9.8	
" 23	7568.4	12	W	b 4 *v*; d 2 *v*	10.0	
1907						
Jan. 11	7587.4	12	W	*v* 4 e; e 2 *v*	10.4	
" 20	7596.4	12	W	*v* = b	9.4	
" 21	7597.4	12	W	b 2.5 *v*	9.6	hazy
" 22	7598.4	12	W	b 5 *v*; *v* = h	10.0	
" 23	7599.4	12	W	h 2 *v*; b 7 *v*	10.2	
" 26	7602.4	12	W	*v* 3 h; b 5 *v*	9.8	
" 28	7604.4	12	W	b 3 *v*; *v* 3 h	9.7	
" 30	7606.4	12	W	b 5 *v*; h 1 *v*	10.0	
Feb. 6	7613.4	12	W	h 4 *v*; *v* 4 k	10.3	
" 8	7615.4	12	W	b 3 *v*; *v* 4 h; *v* 5 l	9.7	
" 11	7618.4	12	W	b 7 *v*; h 3 *v*; *v* 5 k; *v* 3 l	10.2	
" 12	7619.32	12	W	*v* 2 l; h 4 *v*; *v* 4 k	10.3	
" 12	7619.40	12	W	*v* 3 l; h 4 *v*	10.2	
" 13	7620.35	12	W	l 2.5 *v*; *v* 0.5 c	10.7	
" 13	7620.40	12	W	*v* 1 l; *v* 1.5 k	10.4	
" 14	7621.39	12	W	b 3.5 *v*; b 2 *v*; *v* 4 h; *v* 8 l	9.6	
" 15	7622.4	12	W	b 1.5 *v*	9.6	hazy
" 21	7628.40	12	W	b 3 *v*; b 2 *v*; b 1.5 *v*; *v* 6 l	9.7	
" 22	7629.34	—	W	b 4 *v*; *v* 5.5 l; *v* 1 h	9.8	
" 23	7630.34	12	W	b 6 *v*; *v* 5 l	10.0	
" 27	7634.4	—	W	b 3 *v*; *v* 4.5 d; *v* 8 l	9.6	
Mar. 4	7639.67	—	W	*v* 2 l; *v* 2 k; e 1 *v*; b 8 *v*	10.3	
" 6	7641.35	12	W	b 2 *v*; *v* 4 h	9.6	
" 7	7642.33	—	W	b 6 *v*; *v* 4 l; *v* = h	10.0	hazy
" 8	7643.44	—	W	*v* = e; *v* = d	10.0	clouds
" 9	7644.40	12	W	*v* 3 l; *v* 5 k	10.1	
" 11	7646.37	12	W	b 4 *v*; *v* 2 h; *v* 5 l	9.8	
" 16	7651.38	12	W	*v* 3 l; *v* 2 k	10.2	
" 20	7655.40	12	W	b 5 *v*; *v* 5 l	9.9	
Apr. 17	7683.35	12	W	*v* 1 l	10.3	

R AQUARII *233815* I

1855.0; α $23^h 36^m 19^s$; δ $-16° 5'.3$.

Comparison stars; Hagen numbers used, magnitudes taken from *Annals*, vol. 37, p. 200.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Oct. 7	6761.4	5	W	*v* = 13	10.7	low, hazy
" 13	6767.3	5	W	13 3 *v*; *v* 4 18	11.0	

RR CASSIOPEIAE 235053 VI

1855.0; α $23^h 48^m 32^s$; δ $+52° 55'.1$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 274, with the addition of Hagen star 69, mg. 13.2, obtained by estimation. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Feb. 4	8707.4	5	W	34 2 *v*; *v* = 39	11.1	
" 12	8715.4	5	W	*v* = 39	11.2	
Mar. 3	8734.4	4	W	39 2 *v*	11.4	*v* just caught
Apr. 2	8764.4	12	F	*v* 1 69; 66 2 *v*	12.8	
" 10	8772.3	12	F	*v* not seen; 44 faintest seen	<11.4	
Oct. 28	8973.3	12	F	*v* = 36	11.0	
Nov. 19	8995.4	12	F	*v* 2 39; 30 4 *v*	10.8	
Dec. 2	9008.4	12	F	39 2 *v* 2 44	11.3	
" 8	9014.4	12	F	*v* = 44	11.4	
1911						
Jan. 10	9047.3	12	F	*v* 2 69; *v* = 66	12.6	
" 17	9054.3	12	F	66 2 *v*; *v* 1 69	12.8	
" 24	9061.3	12	F	*v* = 69	13.2	
Feb. 15	9083.3	12	F	69 1.5 *v*; *v* est. 13.5	13.4	*v* very faint
" 21	9089.3	12	F	69 4 *v*; *v* est. 13.5	13.6	
Apr. 18	9145.4	12	F	*v* glimpsed; 69 seen with diff.	13.2 ±	
May 26	9183.4	12	F	68 2 *v*	12.5	l., on limit
Oct. 16	9326.4	12	F	*v* 2 49; 44 2 *v*	11.5	
1912						
Jan. 25	9427.3	12	F	*v* est. 13.5; 69 and fainter seen easily	13.5	m., v. clear
Feb. 12	9445.3	12	F	69 2 *v*; *v* est. 13.5	13.4	very clear
Apr. 10	9503.4	12	F	*v* = 48	11.5	very low
Oct. 14	9690.4	12	F	*v* glimpsed, est. 14.1; 69 seen	14.1	
" 21	9697.3	12	F	*v* not seen; 69 faintest seen	<13.2	m., v. clear
" 29	9705.3	12	F	*v* not seen; 69 seen dimly	<13.2	misty
" 30	9706.3	12	F	*v* not seen, est. <14.0; 69 easy	<14.0	very clear
Dec. 16	9753.4	12	F	69 2 *v*; *v* est. 13.5	13.4	very clear

V CEPHEI 235182

1855.0; α $23^h 49^m 44^s$; δ $+82° 23'.0$.

Comparison stars; the stars used are a, B. D. 84° 517, mg. 6.2, *Annals*, vol. 50; b, 86° 344, mg. 5.6, *Annals*, vol. 50; and w, 82° 748, mg. 7.2, *Annals*, vol. 54.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1904	241					
Oct. 22	6776.3	5	W	v = w	7.2	
Dec. 1	6816.4	B	W	v 5 w	6.7	
" 6	6821.3	B	W	v 6 w	6.6	misty, poor
" 9	6824.4	B	W	v 8 w	6.4	
" 28	6843.4	B	W	v 6 w	6.6	
1905						
Oct. 16	7135.4	—	W	b 5 v; v 1 a	6.1	

V CETI *235209* I

1855.0; $\alpha = 23^h\ 50^m\ 29^s$; $\delta = -9° 46'.1$.

Comparison stars; Hagen numbers used, magnitudes obtained from a curve based on Hagen grades and Harvard magnitudes, *Annals*, vol. 57, p. 274. The co-ordinates of this curve will be found in Table III.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 29	8974.3	12	F	v = 23; v = 26	12.6	
Nov. 11	8987.4	12	F	v 1 16; 15 2 v	11.7	
Dec. 8	9014.4	12	F	3 1.5 v	9.2	
1912						
Oct. 16	9692.4	12	F	v not seen; 28 faintest seen	<13.6	very clear
" 29	9705.4	12	F	v not seen; 14 faintest seen	<11.4	moon, misty
" 31	9707.4	12	F	v not seen; 28 faintest seen	<13.6	very clear
Nov. 30	9737.4	12	F	v = 28	13.6	

U PEGASI 235215 IV

1855.0; $\alpha = 23^h\ 50^m\ 35^s$; $\delta = +15° 8'.9$.

Comparison stars; a *Durchmusterung* map was used, with additional stars taken from the lists published by Chandler, *A. J.*, vol. 15, p. 181, and Yendell, *A. J.*, vol. 15, p. 151. These were later identified with the comparison stars of Hagen and his numbers and magnitudes used.

Date	J. D.	Hr.	Inst.	Obs.	Comparisons	Adopted value
1903	241					
Sept. 18	6376	$9^h\ 25^m$	12	W	phot. comp. with 5, 8, 9, and 15	9.5
" 18	6376	9 51	12	W	phot. comp. with 5, 8, 9, and 15	9.6

Date	J. D.	Hr.		Inst.	Obs.	Comparisons	Adopted value
1903	241						
Sept. 18	6376	10h	13m	12	W	phot. comp. with 5, 8, 9, and 15	9.8
" 21	6379	8	12	12	W	phot. comp. with 5, 8, 9, and 15	9.7
" 21	6379	8	34	12	W	phot. comp. with 5, 8, 9, and 15	9.2
" 21	6379	9	47	12	W	phot. comp. with 5 and 9	9.6
Oct. 19	6407	10	9	12	W	phot. comp. with 7, 8, 9, and 10	9.2
" 19	6407	10	34	12	W	phot. comp. with 7, 8, 9, and 10	9.2
" 19	6407	11	22	12	W	phot. comp. with 7, 8, 9, and 10	9.4
" 19	6407	11	32	12	W	phot. comp. with 7, 8, 9, and 10	9.6
" 21	6409	7	47	12	W	5 4 *v*; 7 1 *v*	9.4
" 21	6409	7	47	12	W	phot. comp. with 5, 7, and 8	9.2
" 21	6409	8	9	12	W	phot. comp. with 5, 7, and 8	9.3
" 21	6409	8	20	12	W	*v* 2 8	9.3

Note.—B. D. position of 15° 4910 is inaccurate, as Hagen finds no star in that position. 15° 4910 is either Hagen 9 or 16. As Chandler's d agrees better with 9, it has been thus identified.

R CASSIOPEIAE 235350 IV

1855.0; α $23^h\ 51^m\ 4^s$; δ $+50°\ 34'.9$.

Comparison stars; Hagen numbers and magnitudes used, also Harvard letters, s and w, from *Annals*, vol. 37, p. 11. One additional faint star, x, was used, the magnitude of which was obtained by direct estimation and comparison.

x: 12.6 mg., 1900, α $23^h\ 53^m\ 11^s$; δ $+50°\ 50'.1$.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1905	241					
Mar. 11	6916.3	12	W	phot. comp. with 16	8.7	low, red
Sept. 26	7115.4	5	W	*v* = 52	11.3	
" 28	7117.4	12	W	*v* 2 52	11.1	
Nov. 30	7180.3	5	W	*v* not seen; 52 faintest seen	<11.3	
1906						
Feb. 16	7258.4	12	W	*v* = x	12.6	
July 27	7419.4	3	W	*v* = 9; *v* 5 14	8.1	hazy
Aug. 19	7442.4	3	W	*v* 4 18; 9 7 *v*	8.6	
Sept. 15	7469.4	3	W	*v* = 18; *v* 6 21	8.8	

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Mar. 11	7646.4	12	W	*v* est. 13.5 ±	13.5 ±	on limit
Aug. 8	7796.4	3	W	*v* 3 6; 3 3 *v*	7.0	
" 18	7806.4	3	W	*v* = 3	6.8	
Sept. 12	7831.4	5	W	*v* 3 3	6.5	
1912						
Oct. 15	9691.3	12	F	43 2 *v*; *v* 3 51	10.8	
" 29	9705.3	12	F	52 2 *v*; *v* 2 s	11.6	
Dec. 16	9753.4	12	F	57 2 *v*; *v* 5 w	12.3	

Z PEGASI 235525 VI

1855.0; $\alpha = 23^h\ 52^m\ 41^s$; $\delta = +25^\circ\ 5'.6$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog, column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1909	241					
Oct. 6	8586.4	5	W	*v* = 10	10.0	
" 6	8586.4	5	R	6 4 *v*; *v* 3 13	9.8	
" 12	8592.4	5	R	8 2 *v*; *v* 5 13	9.8	
" 16	8596.4	5	W	6 5 *v*; *v* 3 9	9.6	
" 26	8606.4	5	W	*v* 3 6; 4 1 *v*	8.8	
Nov. 6	8617.4	5	W	*v* 4 6; 4 1 *v*	8.8	
" 15	8626.4	5	W	*v* 2 6; 4 1 *v*	8.8	
" 29	8640.4	5	W	*v* 1 6	8.9	
Dec. 8	8649.4	5	W	6 2 *v*; *v* − 7	9.2	
" 19	8660.4	5	W	6 4 *v*; *v* 3 9	9.5	
1910						
Jan. 8	8680.4	5	W	6 6 *v*; *v* 8 13	9.6	
Nov. 11	8987.4	5	S	6 4 *v*; *v* 1 8	9.4	
" 19	8995.4	5	S	2 8 *v*; *v* = 6	8.9	
1911						
Jan. 5	9042.4	5	S	*v* = 16; 15 1 *v*	11.3	
" 23	9060.4	5	S	15 2 *v*; *v* 2 16	11.1	

W CETI *235715* VI

1855.0; $\alpha = 23^h\ 54^m\ 41^s$; $\delta = -15^\circ\ 29'.0$.

Comparison stars; Hagen numbers used, magnitudes taken from Hagen catalog column H. P.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1910	241					
Oct. 29	8974.3	12	F	*v* 4 2	8.6	
Nov. 19	8995.4	5	S	6 3 *v*; *v* 3 10	9.8	

Y CASSIOPEIAE 235855 VI

1855.0; α $23^{h}\,55^{m}\,53^{s}$; δ $+51^{\circ}\,52'.3$.

Comparison stars; magnitudes taken directly from a Harvard photograph, except for stars lettered m, n, and n′, which have respectively magnitudes 11.8, 12.2, and 12.5, *Annals*, vol. 57, p. 275.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1907	241					
Oct. 2	7851.4	5	W	v not seen; 11.0 seen	<11.0	
" 26	7875.4	12	W	v not seen; m and n seen	<12.5	poor seeing
Nov. 11	7891.4	12	W	v not seen; 11.0 seen	<11.0	
Dec. 24	7934.4	4	W	v not seen; 10.6 and 11.0 seen	<11.0	
1908						
Jan. 13	7954.4	12	W	v not seen; m and n seen	<12.2	
1909						
Feb. 12	8350.4	5	W	v probably not seen, est. <12.5 m and 11.4 barely seen	<12.5	probably h.

SV ANDROMEDAE 235939

1855.0; α $23^{h}\,56^{m}\,56^{s}$; δ $+39^{\circ}\,18'.1$.

Comparison stars; a *Durchmusterung* map was used with additional faint stars. This was later compared with a Harvard photograph and all but two of the stars were found on it. The Harvard magnitudes were adopted with the exception of those for two of the fainter stars, y and 2, which were obtained by direct estimation and comparison. The positions of the comparison stars were obtained by measurements with the micrometer and on the photograph. The Harvard list has not yet been published at the time of writing, but will appear in *Annals*, vol. 63. The star marked 12.7 mg. on the photograph, though not used for comparison, was found to have magnitude 13.5. The magnitude of star a was taken from *Annals*, vol. 70.

Des.	Mg.	α 1900			δ 1900		B. D.	
a	9.9	23^{h}	59^{m}	26^{s}	+40°	5′.4	39°	5214
b	10.4		59	13	39	54.5		5215
o	10.8		59	47		33.2		
p	11.6		59	10		29.0		
s	11.9		59	9		37.0		
u	12.1		58	53		34.5		
w	12.3		58	49		32.7		
y	13.2		59	38		30.5		
2	13.8		59	8		32.7		

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Jan. 18	7959.4	12	W	v est. about 9.5	9.5 ±	moon
" 27	7968.4	5	W	v = p; v 4 s	11.6	
Feb. 4	7976.4	12	W	s 1 v; v = u; p 5 v	12.1	
" 11	7983.4	12	W	v not seen; u seen	<12.1	moon, low
" 17	7989.4	—	W	v between u and w	12.2	
Nov. 20	8266.4	5	W	v = a; v 2 b	10.0	
Dec. 12	8288.4	4	W	v = p; s 1 v	11.8	
1909						
Jan. 20	8327.4	5	W	v on limit, est. 12.0 ±	12.0 ±	
Feb. 22	8360.4	5	W	v not seen; s faintest seen	<11.9	low
1910						
Oct. 29	8974.3	12	F	y 6 v 6 2	13.5	
1912						
Feb. 15	9448.3	12	F	v est. 9.5; v 1 mg. o	9.5	
" 15	9448.4	12	F	v 7 a		

SU ANDROMEDAE 235943

1855.0: α 23h 57m 10s; δ +42° 44′.6.

Comparison stars; a *Durchmusterung* map was used. The magnitude of star g was obtained by comparison with a and c, the magnitudes for which were found in *Annals*, vol. 54.

a: mg. 7.7, B. D. 42° 4817;
c: 8.0, 4819;
g: 9.0, 4823.

Date	J. D.	Inst.	Obs.	Comparisons	Adopted value	Remarks
1908	241					
Jan. 14	7955.4	12	W	v = c	8.0	very red, m.
" 18	7959.4	12	W	v 1 c	7.9	moon
Feb. 4	7976.4	12	W	c 2 v; v 5 g	8.4	
" 11	7983.4	12	W	c 1 v; v 6.5 g	8.2	
Nov. 1	8247.4	5	W	v 3 c	7.7	moon
" 21	8267.4	5	W	v 1 c	7.9	
Dec. 1	8277.4	5	W	v 1.5 c	7.8	
" 12	8288.4	4	W	v 1 c	7.9	
1909						
Jan. 20	8327.4	5	W	c 2 v	8.2	
1912						
Feb. 23	9456.3	12	F	v 5 c; v 15 g; v 2 a	7.5	v red
Mar. 22	9484.3	12	F	c 2 v; v 6 g	8.3	

TABLE II.

PHOTOMETRIC OBSERVATIONS.

The columns in order give the Julian Day, the hour and minute of the observation and the reading of the photometer scale for the variable and the comparison stars. Each reading was usually the mean of several. The value of one division of the scale is 0.0907 mg. For long period variables the time of the observation is given only to tenths of a day. For certain other stars, such as SS Cygni and RS Cassiopeiae it is given to hundredths of a day.

J. D.	M. T.	Mean readings of photometer scale
		T CASSIOPEIAE
6923.3		*v* 29.1, 5 34.0, 6 34.0
		R ANDROMEDAE
6464.4		*v* 14.1, 17 14.5
		W CASSIOPEIAE
6491.4		*v* 30.0, a 31.0
6569.4		*v* 18.0, a 33.0, b 19.0
		U CEPHEI
6445	7^h 34^m	*v* 10.8, a 18.6, b 26.0, c 24.9, h 33.0, k 8.2
	9 45	*v* 7.5, a 15.7, h 27.0, k 4.1
6460	11 0	*v* 15.5, a 20.4, k 12.0, l 10.2
	12 25	*v* 26.8, a 26.7
	1 15	*v* 34.7, a 27.0, b 30.4, h 35.7
6515	8 31	*v* 19.0, a 24.4, b 29.5, c 28.8, f 39.5, m 39.8
	9 41	*v* 34.6, e 38.9, n 20.9
	9 50	*v* 36.7, e 36.9
6909	7 39	*v* 12.8, b 7.2
	8 3	*v* 12.1, b 6.0
	9 5	*v* 4.5, m 6.2
		S CASSIOPEIAE
6915.4		*v* 17.0, 4 14.0
		U PERSEI
7693.4		*v* 18.0, 3 22.5
		RV ANDROMEDAE
6876.3		*v* 41.1, a 30.4, x 40.0, y 41.5
6884.4		*v* 30.3, a 19.9, x 27.7, y 29.0
6922.3		*v* 44.0, a 51.0, b 46.0
6937.4		*v* 33.5, a 38.5, b 36.3, c 43.2
7293.4		*v* 32.0, b 35.0, d 17.3

J. D.	M. T.	Mean readings of photometer scale
		R Arietis
6464.4		*v* 8.3, 3 9.2, 4 14.0
		RS Persei
6887.4		*v* 4.2, c 5.8
6928.4		*v* 34.2, c 33.2
		RR Persei
6544.4		*v* 44.0, 5 30.0, w 32.5, x 40.2
6553.3		*v* 48.5, 5 28.9, w 31.6, x 40.7
6876.3		*v* 34.7, 5 34.0, b 31.1, x 43.5, z 56.0
6884.3		*v* 25.4, 5 22.5
6898.4		*v* 38.0, 4 38.8, 5 28.2
6916.5		*v* 53.0, x 50.0
7293.4		*v* 41.7, 5 39.7, w 42.0
		R Trianguli
6923.3		*v* 33.2, 10 32.9
		R Persei
6592.4		*v* 26.4, 5 25.2
		T Camelopardalis
6915.4		*v* 6.0, 3 10.0, 4 11.8
		Y Aurigae
6522	9h 36m	*v* 31.5, 22 17.2, 24 23.8, 33 33.2
		S Orionis
6915.4		*v* 50.0, 16 49.6, 17 44.0, 18 50.0, 23 52.8
		RR Tauri
6544.4		*v* 39.1, 29 30.2, 30 33.0, 37 39.0, 47 51.0
		W Camelopardalis
7746.4		*v* 46.5, a 31.2, g 44.8, u 49.3, b 51.5
		Nova Geminorum no. 1
6237	9h 30m	*v* 25.52, a 5.80
6248	9 0?	*v* 39.38, a 8.92, k 16.70, j 13.50
6254	9 10	*v* 55.00, g 40.20, l 58.17 aperture II
	9 15	*v* 29.40, g 15.25, l 34.15 aperture III
6256	9 0?	*v* 43.7, g 29.0, l 47.5
6258	8 40	*v* 31.80, g 19.57, l 30.27
6260	8 45	*v* 32.22, g 17.53, l 29.55
		V Geminorum
6577.4		*v* 5.0, 3 2.5

J. D.	M. T.		Mean readings of photometer scale
			Y Geminorum
6498.4			*v* 18.8, 16 23.8, d 19.0
6523.4			*v* 31.0, 16 37.0, 26 32.1
6586.4			*v* 15.8, 26 19.0
6631.4			*v* 14.0, 16 20.1, 26 17.7, d 15.4
			T Geminorum
6523.4			*v* 19.2, 8 22.5
6570.4			*v* 15.0, 8 19.2
6587.4			*v* 27.5, 8 16.4, 15 25.4
			W Ursae Majoris
6232	10^h	12^m	*v* 24.55, a 7.40, b 27.75, c 12.08, d 29.44
	10	37	*v* 18.68, a 6.92, c 12.62
	11	18	*v* 14.44, a 6.92, c 13.40
	11	32	*v* 12.17, a 6.92, c 13.40
6233	10	28	*v* 24.55, a 6.08, c 11.42
	10	54	*v* 21.25, a 6.08, c 11.42
	11	19	*v* 17.38, a 6.08, c 11.42
	12	5	*v* 23.64, a 6.08, c 11.42
6234	10	10	*v* 33.64, h 18.02, k 24.43
	10	30	*v* 27.76, h 18.02, k 24.43
	10	58	*v* 24.00, h 17.19, k 21.36, b 35.02, d 38.08
	11	12	*v* 28.90, h 17.19, k 21.36, b 35.02, d 38.08
	11	38	*v* 21.07, h 17.19, k 21.36
	11	46	*v* 20.64, h 17.19, k 21.36
6236	9	30	*v* 13.80, h 9.96, k 12.57
	9	48	*v* 11.50, h 9.96, k 12.57
	10	14	*v* 15.56, h 9.96, k 12.57
	10	50	*v* 13.78, h 9.96, k 12.57, n 19.43
	11	42	*v* 12.68, h 9.96, k 12.57, n 19.43
	11	53	*v* 14.82, h 9.96, k 12.57, n 19.43
	1	11	*v* 19.58, h 9.96, k 12.57
	1	30	*v* 19.91, h 9.96, k 12.57
	1	34	*v* 22.18, h 9.96, k 12.57
6250	8	55	*v* 17.75, h 13.63, k 16.12
	9	10	*v* 12.32, h 13.63, k 16.12
	9	24	*v* 19.14, h 13.63, k 16.12
	9	47	*v* 21.66, h 13.63, k 16.12
	10	4	*v* 25.95, h 13.63, k 16.12
	10	30	*v* 30.03, h 13.63, k 16.12
	10	48	*v* 32.06, h 16.88, k 23.95
6251	9	50	*v* 19.88, h 14.85, k 17.85
	10	3	*v* 23.05, o 20.82, m 31.35
	10	22	*v* 26.65, o 20.82, m 31.35
	10	52	*v* 24.55, o 20.82, m 31.35
	11	35	*v* 35.78, m 47.48
	11	41	*v* 22.10, m 33.95
6254	10	4	*v* 12.80, h 6.50, k 9.70, l 16.40
	10	47	*v* 17.10, h 6.50, k 9.70, l 16.40
	11	14	*v* 20.18, h 6.50, k 9.70, l 16.40
6256	9	10	*v* 10.98, l 16.00, o 16.52
	9	38	*v* 18.25, l 16.00, o 16.52
	9	52	*v* 23.52, l 16.00, o 16.52
6257	9	34	*v* 13.22, l 14.34, o 13.79
6258	9	5	*v* 14.12, h 12.92, k 16.67
	9	19	*v* 15.95, h 12.92, k 16.67, l 21.00, o 18.30

J. D.	M. T.		Mean readings of photometer scale
W Ursae Majoris			
6258	9h	15m	v 18.00, h 12.92, k 16.67, l 21.00, o 18.30
6260	9	13	v 18.02, k 16.05, l 25.02, m 34.38, o 25.25
	9	42	v 24.92, k 16.32, l 25.02, m 34.38
	9	56	v 21.00, k 16.32, l 25.02, m 34.38
6267	8	55	v 15.12, h 16.40, k 16.88
	9	16	v 17.18, h 16.40, k 16.88
	9	42	v 21.90, k 17.32, m 29.88
	9	55	v 21.52, k 17.32, m 29.88
6268	10	30	v 30.90, l 30.25, m 39.95, o 31.00
	10	47	v 33.40, k 23.92, l 30.25, m 39.95, o 31.00
	11	5	v 33.68, k 23.92, l 30.25, m 39.95, o 31.00
6293	9	46	v 24.25, h 27.42, k 28.61, m 38.18
	10	1	v 29.10, h 27.42, k 28.61, m 38.18
	10	13	v 26.82, h 27.42, k 28.61, m 38.18
	10	40	v 42.13, k 38.08
	10	46	v 42.38, k 38.08
6297	9	19	v 31.92, h 28.00, k 28.84, m 40.20
	9	32	v 30.40, h 28.00, k 28.84, m 40.20
	9	42	v 28.48, k 29.08, m 40.20
	10	20	v 32.90, k 29.08, m 40.20
6300	10	13	v 17.25, a 3.25, h 13.90, k 15.15
	10	24	v 16.75, a 3.25, h 13.90, k 15.15
	10	53	v 19.85, k 15.00, h 13.50
	11	1	v 19.00, k 15.00, h 13.50
	11	11	v 18.85, k 15.00, h 13.50
6302	9	11	v 11.98, h 8.46, k 8.38
	9	28	v 13.10, h 8.46, k 8.38
	9	54	v 9.96, h 6.50, k 7.05
	10	8	v 12.15, k 10.90, m 22.36
	10	23	v 13.48, k 10.90, m 22.36
	10	37	v 14.85, k 10.90, m 22.36
6306	9	12	v 17.55, h 14.04, k 14.54
Z Draconis			
6299	9h	55m	v 13.18, x 16.27
	10	39	v 9.88, x 16.27
	10	49	v 8.48, x 16.27
6300.4	-	-	v 26.80, z 24.60
6303	9	26	v 15.60, x 14.53
	12	4	v 28.90, z 20.90
6305.4	-	-	v 27.40, e 11.36, f 15.28, z 24.36
6311	12	11	v 19.48, z 16.56
	12	38	v 25.00, x 29.36. z 16.78
	12	49	v 26.75, x 29.36
6322	8	59	v 13.02, z 5.33
T Ursae Majoris			
6915.4			v 10.5, 2 17.5
U Virginis			
6200.4			v 5.5, 4 8.5

J. D.	M. T.	Mean readings of photometer scale
		U Ursae Minoris
6922.3		*v* 38.7, b 30.0, c 29.7, d 46.0
6937.4		*v* 18.3, b 14.0, c 12.4, d 22.0
7693.4		*v* 24.5, d 23.0
		S Ursae Minoris
6877.4		*v* 20.0, 12 18.0
		R Ursae Minoris
6491.4		*v* 28.5, e 31.0
6569.4		*v* 17.0, d 13.8, e 17.3
		RS Draconis
7292.4		*v* 41.3, o 28.0, y 37.3, z 41.7, x 44.2
7713.4		*v* 15.7, a 12.4, b 14.4, c 8.2, m 19.1, n 19.1, o 22.7, x 37.0, y 29.6, z 31.3
		SW Cygni
6460	8^h 4^m	*v* 26.1, 20 26.1
	9 50	*v* 46.1, 20 35.8
		RY Cygni
6439.4		*v* 23.0, a 19.0, b 18.7
6449.3		*v* 10.2, a 7.5, b 10.7
6464.4		*v* 11.9, a 11.8, b 9.2
		RW Cygni
6439.4		*v* 5.5, 18 8.8
6449.4		*v* 1.0, 18 5.8
6459.4		*v* 4.3, 18 9.1
		SZ Cygni
6439	11^h 5^m	*v* 20.4, 33 23.9
6444	9 50	*v* 20.7, 33 23.8
	10 50	*v* 24.7, 33 27.1
6449	9 5	*v* 22.6, 33 19.9
6459	9 25	*v* 16.8, 33 20.4
		TV Cygni
6439	11^h 2^m	*v* 23.6, 48 23.9
6444	10 —	*v* 27.1, 48 23.8
	10 50	*v* 28.0, 48 27.1
6449	9 30	*v* 18.0, 48 19.9
6459	9 5	*v* 26.4, 48 20.4
		TX Cygni
6449	10^h 12^m	*v* 22.3, 26 18.4
6459	8 30	*v* 26.0, 26 20.3, 38 33.8

J. D.	M. T.	Mean readings of photometer scale
		SS CYGNI
6412.42		*v* 14.5, a 17.0, b 2.6, c 12.8
6417.42		*v* 23.6, e 20.8, p 21.5
6428.38		*v* 30.8, m 30.0
6437.38		*v* 13.2, a 20.6, b 10.6, c 18.0
6437.45		*v* 16.3, a 21.3, b 12.3, c 20.5
6438.27		*v* 12.7, a 19.6, b 9.0, c 20.2
6438.50		*v* 17.7, a 29.0, b 13.1, c 26.5
6439.37		*v* 15.7, a 23.9, b 13.8, c 19.2
6444.35		*v* 29.7, n 32.3, p 33.9
6445.34		*v* 29.6, d 26.2, n 27.1, p 27.6
		S LACERTAE
6491.3		*v* 37.0, 42 39.0
		V CASSIOPEIAE
6916.4		*v* 20.5, 5 26.0, k 28.0
		RS CASSIOPEIAE
6874.38		*v* 36.9, c 40.0, d 34.5
6884.38		*v* 24.7, c 31.3, d 23.2, e 27.3
6916.42		*v* 46.4, b 42.0
6928.33		*v* 54.0, b 45.5, d 53.0
6938.31		*v* 49.8, e 50.2
7294.4		*v* 28.7, b 27.8
		U PEGASI
6376	9^{h} 25^{m}	*v* 18.9, 5 15.1, 8 19.7, 9 25.7, 15 34.7
	9 51	*v* 20.8, 5 15.1, 8 19.7, 9 25.7, 15 34.7
	10 43	*v* 22.4, 5 15.1, 8 19.7, 9 25.7, 15 34.7
6379	8 12	*v* 18.5, 5 13.0, 8 17.7, 9 24.1, 15 28.5
	8 34	*v* 13.1, 5 13.0, 8 17.7, 9 24.1, 15 28.5
	9 47	*v* 14.9, 5 8.1, 9 20.1
6407	10 9	*v* 4.8, 7 3.0, 8 7.2, 9 18.7, 10 19.5
	10 34	*v* 4.9, 7 3.0, 8 7.2, 9 18.7, 10 19.5
	11 22	*v* 7.4, 7 3.0, 8 7.2, 9 18.7, 10 19.5
	11 32	*v* 8.8, 7 3.0, 8 7.2, 9 18.7, 10 19.5
6409	7 47	*v* 11.4, 5 7.3, 7 13.4, 8 15.6
	8 9	*v* 12.4, 5 7.3, 7 13.4, 8 15.6
		R CASSIOPEIAE
6916.3		*v* 34.0, 16 36.5

TABLE III.

CONVERSION OF HAGEN GRADES INTO HARVARD MAGNITUDES.

The table gives the magnitude on the Harvard photometric scale for every tenth grade of Hagen. The name of the star is given at the head of each column.

Hagen Grades	R Androm.	U Cassiop.	S Piscium	U Persei	S Arietis	R Arietis	R Triang.	U Arietis
0	7.70	8.36	8.02	8.05	8.60	8.30	6.74	8.20
10	8.26	8.68	8.84	8.49	9.32	8.96	7.58	8.86
20	8.76	9.04	9.64	8.86	10.04	9.58	8.19	9.52
30	9.23	9.39	10.59	9.18	10.77	10.19	8.69	10.20
40	9.69	9.77	11.07	9.50	11.48	10.79	9.18	10.96
50	10.12	10.17	11.71	9.80	12.13	11.39	9.64	11.84
60	10.51	10.58	12.33	10.07	12.71	12.04	10.01	12.65
70	10.90	11.03	12.95	10.31	13.15	12.72	10.41	13.37
80	11.29	11.51	13.57	10.58	13.52	13.48	10.78	14.12
90	11.67	11.89		10.89	13.86		11.08	
100	12.02	12.16		11.23			11.36	
110	12.38	12.39		11.63			11.61	
120	12.75	12.56		12.04			11.87	
130	13.10	12.68		12.41			12.12	
140	13.47	12.80		12.75			12.36	
150	13.82	12.91		13.04			12.60	
160								
170								
180								
190								
200								

Hagen Grades	R Persei	W Tauri	T Camel.	V Tauri	R Orionis	V Orionis	S Orionis	S Camel.
0	7.01	7.58	7.53	7.27	8.72	7.40	7.62	8.00
10	7.51	8.99	8.31	7.93	9.18	8.15	8.24	8.52
20	7.99	10.12	9.01	8.59	9.68	8.79	8.86	9.02
30	8.48	10.97	9.61	9.23	10.20	9.41	9.51	9.51
40	8.95	11.61	10.11	9.89	10.75	10.00	10.31	10.00
50	9.42	12.10	10.58	10.57	11.34	10.54	11.32	10.52
60	9.88	12.50	10.94	11.21	11.97	10.99	12.17	11.09
70	10.32	12.85	11.27	11.81	12.48	11.36	12.84	11.60
80	10.76		11.57	12.36	12.86	11.66	13.45	12.01
90	11.19		11.83	12.73	13.16	11.91		12.33
100	11.52		12.11	13.00	13.42	12.12		12.50
110	11.84		12.38	13.24	13.66	12.31		12.66
120	12.11		12.63			12.50		12.79
130	12.34		12.87			12.68		12.92
140	12.56		13.11			12.86		13.05
150	12.75		13.34					
160	12.92		13.53					
170	13.10		13.76					
180	13.26							
190	13.41							
200	13.58							

[illegible]	U Aurigae	X Aurigae	V Mon.	V Gem.	T Can. Min.	U Can. Min.	S Gem.	T Gem.
0	7.80	8.37	6.56	7.50	8.31	8.50	7.50	7.30
10	8.29	9.01	6.94	8.27	8.59	9.33	8.07	7.92
20	8.76	9.53	7.31	8.94	8.89	10.11	8.63	8.59
30	9.21	9.93	7.68	9.59	9.20	10.82	9.19	9.25
40	9.67	10.29	8.04	10.20	9.50	11.41	9.77	9.97
50	10.12	10.61	8.41	10.81	9.83	11.87	10.32	10.65
60	10.56	10.90	8.77	11.34	10.16	12.26	10.90	11.35
70	10.98	11.17	9.13	11.81	10.49	12.58	11.51	12.01
80	11.34	11.43	9.47	12.21	10.82	12.83	12.11	12.60
90	11.68	11.68	9.81	12.58	11.20	13.04	12.63	13.15
100	11.93	11.94	10.14	12.90	11.58	13.23	13.03	13.61
110	12.17	12.19	10.48	13.22	12.00	13.39	13.32	14.00
120	12.36	12.43	10.82	13.51			13.57	
130	12.52	12.68	11.16				13.75	
140	12.69	12.90	11.48					
150	12.84		11.79					
160	12.97		12.10					
170	13.10		12.41					
180			12.70					
190			12.99					
200								

[illegible]	U Gem.	U Cancri	X Leonis	W Leonis	S Leonis	R Comae	X Librae	U Bootis
0	8.57	7.11	7.89	7.95	8.59	7.10	8.29	7.80
10	9.30	7.67	8.65	8.43	9.16	8.00	8.96	8.64
20	9.94	8.12	9.36	8.98	9.72	8.40	9.67	9.44
30	10.52	8.51	10.02	9.49	10.28	8.80	10.65	10.18
40	11.09	8.88	10.64	10.01	10.82	9.20	11.46	10.80
50	11.60	9.24	11.21	10.59	11.34	9.58	11.96	11.36
60	12.09	9.58	11.68	11.21	11.86	9.97	12.37	11.84
70	12.51	9.91	12.09	11.89	12.34	10.35	12.71	12.22
80	12.89	10.22	12.44	12.39	12.69	10.72	13.01	12.53
90	13.26	10.50	12.77	12.76	12.87	11.11		12.78
100	13.59	10.77	13.01	13.03	12.98	11.48		12.99
110	13.92	11.02	13.22	13.29	13.07	11.83		13.19
120		11.28	13.41			12.18		
130		11.53				12.53		
140		11.79				12.90		
150		12.03						
160		12.29						
170		12.56						
180		12.82						
190		13.07						
200		13.35						

Hagen Grades	V Coronae	R Serpentis	R Aquilae	Z Cygni	S Delphini	Y Aquarii	T Delphini	V Delphini
0	7.90	6.78	7.18	7.31	8.37	8.82	7.05	7.81
10	8.39	7.78	7.84	7.98	8.77	9.23	8.25	8.51
20	8.84	8.61	8.42	8.53	9.22	9.61	9.22	9.16
30	9.30	9.29	8.94	9.08	9.69	9.99	10.06	9.65
40	9.76	9.89	9.40	9.56	10.13	10.34	10.84	10.01
50	10.17	10.44	9.84	9.98	10.54	10.67	11.58	10.35
60	10.59	10.94	10.28	10.38	10.99	10.95	12.27	10.65
70	10.99	11.38	10.70	10.76	11.43	11.21	12.92	10.98
80	11.38	11.81	11.10	11.12	11.85	11.44		11.29
90	11.74	12.20	11.50	11.45	12.18	11.65		11.64
100	12.04	12.52	11.90	11.72	12.33	11.82		12.06
110	12.33	12.80	12.28	11.97	12.44	11.97		
120	12.57	13.03	12.66	12.20	12.55	12.09		
130	12.82	13.24	13.01	12.38		12.20		
140	13.03	13.41	13.35	12.53		12.28		
150	13.23	13.58	13.69	12.66		12.37		
160	13.41	13.75	13.99					
170	13.58	13.88	14.31					
180		14.02						
190								
200								

Hagen Grades	T Pegasi	S Lacertae	R Lacertae	RR Cass.	V Ceti
0	8.10	8.00	7.94	7.20	7.49
10	8.81	8.33	8.31	7.67	8.11
20	9.46	8.61	8.70	8.12	8.74
30	10.01	8.91	9.06	8.58	9.35
40	10.55	9.22	9.36	9.04	9.98
50	11.09	9.54	9.68	9.49	10.60
60	11.61	9.84	9.95	9.96	11.24
70	12.10	10.18	10.23	10.42	11.87
80	12.54	10.50	10.54	10.90	12.50
90	12.97	10.86	10.85	11.36	13.12
100	13.39	11.20	11.16	11.81	13.73
110	13.81	11.54	11.49	12.27	
120	14.21	11.93	11.83	12.71	
130		12.25	12.20	13.14	
140		12.57	12.50	13.58	
150		12.87	12.79		
160		13.17	13.00		
170			13.19		
180			13.36		
190			13.51		
200					

TABLE IV.

OBSERVED MAXIMA AND MINIMA AND COMPARISON WITH THE EPHEMERIS.

The first column gives the name of the star, the second the Julian Day of the observed maximum or minimum, the third, the predicted date of maximum or minimum computed from Hartwig's elements, *Vierteljahrsschrift* for 1913. Where no J. D. is given in this column, it indicates that the data necessary for deducing it are not given by Hartwig. The fourth column gives the differences "*O*-*C*" and the fifth column the magnitude at maximum or minimum. The sixth column gives the references to earlier publications of results from the same observations. The complete revision of the magnitudes may sometimes cause a change of a few days in the time of the observed maximum or minimum, or in the magnitude.

The stars are arranged in the order of their right ascensions.

Star	*O*	*C*	*O–C*	Mg.	References
	241	241			
T Androm.	Max. 6865	6854	+11	8.6	
T Cass.	Max. 7380	7390	−10	8.0	*A. J.* 600
	Min. 7558	7586	−28	11.6	*A. J.* 600
	Max. 7825	7833	− 8	7.8	*A. N.* 4326
	Min. 8049	8029	+20	11.9	*A. N.* 4326
	Max. 8302	8276	+26	8.0	*A. N.* 4326
R Androm.	Max. 5734	5730	+ 4	6.3	
	Min. 5967	6025	−58	14.1	
U Cass.	Max. 7207	7189	+18	8.0	*A. J.* 600
	Max. 8320	8301	+19	8.4	*A. N.* 4326
V Androm.	Min. 8661	8680	−19	14.1	
W Cass.	Max. 7826	7834	− 8	8.7	*A. N.* 4267
	Min. 8042	8018	+24	11.0	*A. N.* 4267
	Max. 8232	8238	− 6	8.9	*A. N.* 4326
	Max. 8618	8640	−22	8.9	*A. J.* 613
S Cass.	Max. 6901	6897	+ 4	8.4	
	Min. 7236	7255	−19	13.4	
	Max. 7496	7502	− 6	7.6	*A. J.* 600
R Piscium	Max. 6030	6003	+27	8.4	
RU Androm.	Max. 8634	8641	− 7	9.9	
U Persei	Max. 7056	7066	−10	7.9	*A. J.* 586
	Min. 7560	7541	+19	10.8	*A. J.* 600
	Max. 8320	8317	+ 3	8.2	*A. N.* 4326
	Max. 8678	8633	+45	8.4	*A. J.* 613
RV Androm.	Min. 7189	7210	−21	10.6	*A. J.* 586
	Max. 7619	7614	+ 5	9.1	
	Min. 8750	8724	+26	10.4	
R Arietis	Max. 5722	5705	+17	8.3	
	Max. 6094	6092	+ 2	8.4	
	Max. 6453	6464	−11	8.1	
	Max. 7213	7213	0	8.4	
	Max. 8687	8691	− 4	6.9	

Star	*O*	*C*	*O-C*	Mg.	References
	241	241			
RR Persei	Max. 7230	7229	+ 1	9.7	*A. N.* 4205
	Max. 7613	7618	− 5	8.7	
R Trianguli	Max. 7207	7233	−26	7.2	
	Max. 7517	7495	+22	6.9	*A. J.* 600
	Min. 7631	7642	−11	11.8	*A. J.* 600
	Max. 9064	9069	− 5	5.8	*A. J.* 628
Y Persei	Min. 7909	7909	0	10.0	*A. N.* 4326
	Max. 8014	8035	−21	8.4	
	Max. 8272	8290	−18	8.3	
R Persei	Min. 7956	7978	−22	13.4	*A. N.* 4267
	Max. 8710	8719	− 9	8.7	*A. J.* 613
R Tauri	Max. 8770	8812	−42	8.0	*A. J.* 613
	Max. 9414	9462	−48	9.2	
V Tauri	Min. 8748	8746	+ 2	12.4	
	Min. 9413	9426	−13	12.9	
R Aurigae	Min. 8113	8106	+ 7	12.6	*A. N.* 4326
	Max. 8360	8352	+ 8	8.2	*A. N.* 4326
U Aurigae	Min. 8456	8470	−14	13.4	
	Max. 8630	8646	−16	8.3	
U Orionis	Min. 8678	8732	−54	12.1	*A. J.* 613
X Aurigae	Max. 8398	8379	+19	8.4	*A. J.* 605
	Max. 8715	8704	+11	8.1	*A. J.* 613
	Min. 8782	8795	−13	12.6	
	Min. 9134	9120	+14	12.9	
RR Aurigae	Max. 8708	8708	0	9.2	
SS Aurigae	Max. 8065			11.0	
W Camel.	Max. 7151	7167	−16	10.0	
	Min. 8475			14.6	
	Max. 8623	8642	−19	10.0	
	Min. 8760			14.4	
	Min. 9062			14.4	
V Aurigae	Max. 8383	8364	+19	8.9	*A. J.* 605
	Max. 8718	8716	+ 2	8.7	*A. J.* 613
Y Monoc.	Max. 8762	8762	0	9.2	
	Min. 9118	9105	+13	13.6	
T Can. Min.	Max. 9530	9516	+14	10.0	
V Gemin.	Max. 8792	8794	− 2	7.9	
U Cancri	Max. 8365	8397	−32	9.7	*A. J.* 605
R Leonis	Max. 7009	6992	+17	5.8	
	Max. 9530	9495	+35	5.8	
R Urs. Maj.	Max. 7589	7566	+23	7.6	*A. N.* 4267
RU Urs. Maj.	Max. 8426			8.7	*A. J.* 605
	Max. 9172			8.5	
	Max. 9434			8.7	
Y Virginis	Max. 5873	5882	− 9	8.9	
T Urs. Maj.	Max. 7439	7410	+29	8.2	*A. J.* 600
	Max. 7694	7669	+25	7.8	*A. J.* 600
	Max. 9490	9490	0	7.7	
R Virginis	Max. 7383	7407	−24	5.9	
RV Draconis	Max. 9157	9144	+13	9.0	
	Min. 9073			13.6	
	Min. 9290			13.3	
	Max. 9360	9347	+13	9.1	
	Min. 9488			13.8	
RS Urs. Maj.	Max. 8494	8508	−14	8.3	*A. J.* 613
	Min. 8641			14.1	*A. J.* 613
	Max. 8766	8764	+ 2	8.8	
	Max. 9024	9019	+ 5	8.7	*A. J.* 628
S Urs. Maj.	Max. 7521	7528	− 7	7.8	*A. J.* 600

Star	*O*	*C*	*O–C*	Mg.	References
	241	241			
S Urs. Maj.	Min. 7647	7648	– 1	11.0	*A. J.* 600
	Max. 7753	7754	– 1	7.5	*A. N.* 4267
U Virginis	Max. 6223	6208	+15	7.6	
	Max. 9524	9505	+19	7.7	
RR Urs. Maj.	Max. 8485	8483	+ 2	8.9	
	Min. 8617			13.9	
	Max. 8720	8713	+ 7	8.9	
	Min. 9092			14.2	
T Urs. Min.	Min. 8733			13.6	
	Max. 9190	9211	–21	8.6	
	Min. 9359			13.9	
	Max. 9504	9532	–28	9.0	
	Min. 9673			13.9	
U Urs. Min.	Max. 6969	6974	– 5	8.3	*A. N.* 4205
	Min. 7139	7136	+ 3	11.4	*A. N.* 4205
	Max. 7295	7301	– 6	8.1	*A. N.* 4205
	Min. 8425	8444	–19	12.2	*A. J.* 605
	Max. 8600	8609	– 9	8.3	*A. J.* 605
	Min. 8743	8771	–28	12.4	
S Bootis	Max. 5908	5863	+25	8.0	
	Max. 7793	7774	– 1	8.5	*A. N.* 4267
	Min. 8453	8459	– 6	13.2	*A. J.* 605
	Max. 8597	8593	+ 4	8.2	*A. J.* 605
	Min. 9009	9005	+ 4	13.6	*A. J.* 627
	Max. 9153	9139	+14	8.6	
	Max. 9404	9412	– 8	8.8	
R Bootis	Max. 7038	7045	– 7	6.6	*A. J.* 586
	Min. 7372	7390	–18	11.9	*A. J.* 600
RT Bootis	Min. 8488			13.4	
S Serpentis	Max. 7793	7813	–20	8.4	*A. N.* 4267
R Serpentis	Max. 7399	7432	–33	7.0	*A. J.* 600
V Coronae	Min. 8583	8570	+13	12.0	*A. J.* 613
R Herculis	Max. 7402	7388	+14	9.3	
U Serpentis	Max. 8552	8541	+11	8.6	*A. J.* 605
U Herculis	Max. 7368	7374	– 6	7.9	*A. J.* 600
	Max. 7763	7777	–14	7.8	*A. J.* 4267
	Max. 8579	8583	– 4	8.4	*A. J.* 613
SS Herculis	Min. 8498	8513	–15	13.0	*A. J.* 628
	Max. 8552	8553	– 1	8.5	*A. J.* 628
W Herculis	Max. 7075	7089	–14	8.2	*A. J.* 586
	Max. 7342	7369	–27	8.5	
	Max. 8466	8481	–15	8.4	
	Min. 8610	8628	–18	13.8	
R Draconis	Max. 7033	7031	+ 2	7.8	
	Min. 7880	7906	–26	12.3	*A. N.* 4326
S Herculis	Max. 7048	7036	+12	7.6	
	Max. 8544	8543	+ 1	7.9	
T Draconis	Max. 7418	7433	–15	9.1	
	Min. 7670	7677	– 7	12.3	
T Herculis	Max. 5933	5947	–14	8.5	
	Max. 7097	7096	+ 1	7.9	*A. J.* 586
	Max. 7762	7753	+ 9	7.6	*A. N.* 4267
	Min. 7852	7839	+13	12.5	*A. N.* 4267
RY Lyrae	Max. 8607	8607	0	9.8	*A. J.* 613
RS Draconis	Max. 7157	7138	+19	9.4	
	Min. 7280	7304	–24	10.8	
	Min. 7571	7585	–14	11.2	
R Aquilae	Max. 8555	8577	–22	5.8	
W Aquilae	Min. 8830			13.4	*A. J.* 627

Star	*O*	*C*	*O–C*	Mg.	References
	241	241			
R Cygni	Max. 6835	6836	− 1	7.5	*A. J.* 605
	Max. 8525	8543	−18	6.0	*A. J.* 605
	Max. 8996	8970	+26	8.9	*A. J.* 627
	Max. 9365	9397	−32	6.1	
RT Cygni	Max. 6795	6800	− 5	7.0	
	Max. 7741	7753	−12	6.7	
	Min. 7842	7855	−13	12.1	
	Max. 8502	8515	−13	7.2	*A. J.* 613
	Min. 8604	8617	−13	11.1	*A. J.* 613
	Max. 8681	8705	−24	7.2	*A. J.* 613
TU Cygni	Max. 8622	8620	+ 2	9.8	
χ Cygni	Max. 6832	6811	+21	4.2	
	Min. 7878	7862	+16	12.7	
Z Cygni	Max. 7482	7445	+37	8.9	*A. J.* 600
	Min. 8616	8635	−19	13.4	*A. J.* 613
	Max. 8997	9023	−26	8.7	*A. J.* 627
S Aquilae	Min. 8580	8560	+20	11.4	*A. J.* 627
	Max. 8630	8630	0	9.0	*A. J.* 627
	Min. 9022	9030	− 8	11.4	*A. J.* 627
	Min. 9333	9344	−11	11.5	
V Vulpec.	Max. 8226	8225	+ 1	8.4	
	Min. 8246			8.9	
	Max. 8266	8263	+ 3	8.4	
	Min. 8283			8.9	
	Max. 8303	8301	+ 2	8.4	
S Delphini	Max. 9012	8993	+19	9.2	*A. J.* 627
T Aquarii	Min. 7864	7889	−25	13.1	
	Max. 8536	8548	−12	8.6	*A. J.* 613
	Min. 8650	8666	−16	13.6	*A. J.* 613
R Vulpec.	Max. 8233	8221	+12	7.5	*A. N.* 4326
	Min. 8988	8974	+14	12.7	*A. J.* 628
	Max. 9057	9036	+21	7.6	*A. J.* 628
TW Cygni	Max. 9007	9054	−47	9.9	*A. J.* 628
	Max. 9344	9396	−52	10.6	
R Equulei	Max. 8968	8967	+ 1	8.9	*A. J.* 628
T Cephei	Min. 7910	7922	−11	10.1	*A. N.* 4267
	Max. 8532	8517	+15	6.7	*A. J.* 613
S Cephei	Max. 8480	8475	+ 5	8.2	*A. J.* 613
	Min. 8735	8697	+38	10.8	*A. J.* 613
SS Cygni	Max. 6438			8.6	
	Max. 6784			8.6	
	Max. 7509			8.7	
	Max. 7548			8.8	
	Max. 7804			8.2	
	Max. 7873			8.5	
	Max. 7921			8.8	
	Max. 8259			8.9	
	Max. 8295			8.9	
	Max. 8523			8.2	
	Max. 8597			9.5	
RR Pegasi	Max. 8640	8644	− 4	9.4	
V Pegasi	Max. 9395	9413	−18	8.4	
	Max. 9709	9716	− 7	8.4	
Y Pegasi	Max. 8635	8668	−33	10.8	
	Max. 9055	9086	−31	10.2	
	Min. 9382			14.0	
X Aquarii	Max. 9016	9035	−19	8.2	
RV Pegasi	Min. 8628	8641	−13	8.8	*A. J.* 613
S Lacertae	Max. 6888	6890	− 2	8.3	

Star	O	C	O–C	Mg.	References
	241	241			
S Lacertae	Max. 8572	8553	+19	8.0	A. J. 613
R Lacertae	Max. 9040	9050	−10	9.1	A. J. 628
RW Pegasi	Min. 8670			13.7	A. J. 628
	Max. 8985	8988	− 3	9.6	A. J. 628
	Max. 9393	9406	−13	9.5	
	Min. 9720			14.1	
R Pegasi	Max. 7468	7482	−14	7.4	
	Max. 8597	8620	−23	7.6	A. J. 613
	Max. 8975	9001	−26	7.2	A. J. 628
V Cass.	Max. 7175	7147	+28	7.9	
	Max. 7401	7376	+25	8.3	
	Max. 7616	7605	+11	7.4	
	Max. 7830	7834	− 4	8.3	
	Max. 8754	8750	+ 4	8.2	A. J. 613
W Pegasi	Max. 8612	8622	−10	7.7	A. J. 613
S Pegasi	Max. 9075	9037	+38	7.6	
	Max. 9404	9355	+49	8.2	
RR Cass.	Max. 8720	8722	− 2	11.1	
	Max. 8988	9029	−41	10.8	A. J. 627
	Min. 9107	9172	−64	13.7	
	Min. 9422	9479	−57	13.5	
R Cass.	Min. 7640	7644	− 4	13.6	
Z Peg.	Max. 8618	8629	−11	8.7	A. J. 613

14. MISCELLANEOUS RESULTS.

An inspection of Table IV shows that for a number of the stars the quantity "O–C" is quite large. In some cases it is sufficiently large to make it desirable that the stars receive further attention from regular observers of variables. They are as follows: U Cancri, RR Cass., TW Cygni, U Orionis, S Pegasi, Y Pegasi, R Piscium, R Tauri, T Urs. Min.

Among the stars not on this list there were many for which it was possible to compare the observed and predicted times of maximum or minimum. Even though the observations were too scattered to permit the determination of the exact time, an inspection of the plots usually indicated whether there was large divergence or fairly close agreement. Those which are most discordant are contained in the following list: RU Aurigae, U Bootis, R Cancri, X Cass., RV Cass., TT Cass., U Cygni, T Delph., Y Delph., RV Herc., S Lacertae, U Lyrae, S Orionis, RS Pegasi, RZ Pegasi, R Serp., S Serp., S Tauri, Z Tauri.

A third list contains those stars which vary only a little from the ephemeris, and yet are not in exact accord with it. RV Androm., Y Aquarii, W Aquilae, V Boötis, W Camel., S Can. Min., T Can. Ven., R Delph., V Delph., SS Herc., W Leonis, V Monoc., T Pegasi.

A fourth list contains those stars which show a very good agreement with the predictions. W Androm., Y Androm., RU Androm., S Aquarii, W Aurigae, RT Boötis, R Camel, S Camel., T Camel., V Cancri, R Can. Ven., R Ceti, R Comae, S Gem., X Gem., V Leonis, S Urs. Min., V Virginis.

Three stars are selected for special mention and are particularly recommended for observation.

TW Cygni has on the downward slope a slight secondary maximum, which has been observed three times.

The elements of RU Urs. Maj. are marked unknown in Vjs. 1913. The forty-seven observations made at this Observatory give the following elements, J. D. 2418426 + 252 E. The predicted maxima agree very well with the observed. The curve is quite pointed at the maximum. The magnitude ranges from 8.5 at maximum to <14.0 at minimum.

The case of V Camel. is especially interesting. The elements, J. D. 2416773 + 207 E, are given by Hartwig. Maxima have not occurred at every predicted time but have come somewhat irregularly. The following list shows the relation between prediction and observation during the last eleven periods. The date given is that of the predicted maximum, the word following shows what was observed. J. D. 2417808, max., 8015, no. obs., 8222, no obs., 8429, min., 8636, min., 8843, max., 9050, min., 9257, max., 9464, min., 9671, min., 9878, max. That is, a minimum lasted from J. D. 8420 to 8792 or over two maxima, a second minimum from 8980 through 9180 or over one maximum, a third from 9480 to 9795 or over two maxima. No change in the length of the period will improve the agreement. The suggestion is made by the editor that this star belongs to the U Geminorum type, for two reasons, firstly because the rise to maximum is very abrupt, and secondly because the duration of maximum is sometimes rather long and sometimes very short. This star is well worth continued observation, and the fact that it is circumpolar makes it an easy object at all times of year.

The stars TY Aquilae, TY Aurigae and Y Coronae, which are all white, have small range and change rapidly. They may later be proven to be of short period.

15. List of Publications.

The following list contains the published articles, etc,. which have been issued by the staff of the Observatory during the directorate of Professor Whitney.

1. Longitude of Smith College Observatory. Mary W. Whitney. *H. C. O. Annals*, vol. 28.
2. Maria Mitchell. Mary W. Whitney. *Sidereal Messenger*, vol. 9, p. 49.
3. The Double Star S503. Mary W. Whitney. *Sidereal Messenger*, vol. 10, p. 300.
4. Observations of Nova Aurigae made at the Vassar College Observatory. Mary W. Whitney. *Astronomy and Astrophysics*, vol. 11, p. 461.
5. Some recent markings on Jupiter. Mary W. Whitney. *Astron. and Astroph.*, vol. XII, p. 22.
6. The Scientific Value of a Total Lunar Eclipse. Caroline E. Furness. *Pop. Ast.*, vol. III, p. 109.
7. Tycho Brahe. Caroline E. Furness. *Pop. Ast.*, vol. III, p. 121.
8. Determination of the Positions of Comets. Mary W. Whitney. *Pop. Ast.*, vol. IV, p. 177.
9. Total Lunar Eclipse of Sept. 3, 1895 observed at Poughkeepsie, N. Y. Mary W. Whitney. *Ast. Nach.*, Nr. 3317.
10. Tycho Brahe. Caroline E. Furness. *The Observer*, vol. VII, p. 313.
11. Kepler. Caroline E. Furness. *The Observer*, vol. VII.
12. Observations of Comet 1890*a*. Mary W. Whitney. *Ast. Jour.*, vol. X, p. 55.
13. Observations of Comet 1892*a*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 48.
14. Observations of Comet 1892*a*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 93.
15. Observations of Comet 1892*f*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 133.
16. Observations of Comet 1892*f*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 149.
17. Observations of Comet 1892*g*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 175.
18. Observations of Comet 1892*g*. Mary W. Whitney and Mary S. Wagner. *Ast. Jour.*, vol. XII, p. 188.
19. Observations of Comet 1892*f*. Mary W. Whitney. *Ast. Jour.*, vol. XII, p. 38.
20. Observations of Comet 1892*g*. Mary W. Whitney and Mary S. Wagner. *Ast. Jour.*, vol. XIII, p. 7.
21. Lunar Eclipse of March 10, 1895. Mary W. Whitney. *Ast. Jour.*, vol. XV, p. 38.
22. Observations of Minor Planet (372). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XV, p. 162.
23. Observations of Comet 1895*c*. Mary W. Whitney. *Ast. Jour.*, vol. XVI, p. 38.
24. Observations of Minor Planets (306), (349), (225). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVI, p. 47.
25. Observations of Comet 1896*a*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVI, p. 72.

26. Observations of Comet 1896*a*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVI, p. 103.
27. Observations of Comet 1896*b*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVI, p. 119.
28. Observations of Minor Planets (313), (175), (113), (190), (71), (121), (130), (329), and Comets 1896*b*, 1896*f*. Mary W. Whitney and Caroline E. Furness and Mary E. Tarbox. *Ast. Jour.*, vol. XVII, p. 37.
29. Observations of Comet 1896*g*. Mary W. Whitney. *Ast. Jour.*, vol. XVII, p. 56.
30. Observations of Comet 1896*g*. Mary W. Whitney. *Ast. Jour.*, vol. XVII, p. 72.
31. Observations of Minor Planets (106), (225), (306), (209), (354), (258). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVII, p. 77.
32. Observations of Comet 1896*g*. Mary W. Whitney. *Ast. Jour.*, vol. XVII, p. 92.
33. Observations of Minor Planets (168), (90), (24), (38), (275), (16), (198). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVII, p. 144.
34. Observations of Minor Planets (362), (303), (190), (324), (123), (146). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVII, p. 181.
35. Observations of Minor Planets (313), (113). Mary E. Tarbox, *Ast. Jour.*, vol. XVIII, p. 8.
36. Observations of Comet 1897*b*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVIII, p. 80.
37. Observations of Minor Planets (116), (148), (33), (113), (283), (179). Mary W. Whitney, Caroline E. Furness, Mary E. Tarbox. *Ast. Jour.*, vol. XVIII, p. 109.
38. Observations of Minor Planets (43), (230), (174), (120), (131), (159), (34), (287). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XVIII, p. 178.
39. Observations of Comet 1898*b*. Mary W. Whitney. *Ast. Jour.*, vol. XIX, p. 8.
40. The Problem of Solar Motion. Mary W. Whitney. *Pop. Ast.*, vol. V, p. 309.
41. Observations of Comet 1898*b*. Caroline E. Furness. *Ast. Jour.*, vol. XIX, p. 39.
42. Observations of Minor Planets (261), (247), (213), (306), (207), (16), and Comet 1898*c*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XIX, p. 187.
43. Observations of Minor Planets (354), (347), (151), (363), (82), (56), Eros. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XX, p. 29.
44. Observations of Minor Planets (219), (266), (46), (11), (402), (6). Mary W. Whitney and Alice E. Everett. *Ast. Jour.*, vol. XX, p. 47.
45. Observations of Minor Planets (385), (287), (17), (346), (423), (118), and Comet 1899*a*. Mary W. Whitney and Alice E. Everett. *Ast. Jour.*, vol. XX, p. 76.
46. Observations of the Leonids of 1899. Mary W. Whitney. *Ast. Jour.*, vol. XX, p. 148.
47. Observations of Minor Planets (407), (362), (198), (31) and Comet 1899*a*. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XX, p. 159.
48. Observations of Minor Planet 1899 EY. Mary W. Whitney and Caroline E. Furness. *Ast. Nach.*, Nr. 3635.
49. Occultations of Stars during the Lunar Eclipse of Dec. 6, 1899. Mary W. Whitney, *Ast. Nach.*, Nr. 3641.
50. Report on the Eclipse of May 28, 1900. Mary W. Whitney. *Science*, June 22, 1900

51. Report on the Eclipse of May 28, 1900. Mary W. Whitney. *Astroph. Jour.*, vol. XII, p. 96.
52. Report on the November Meteors, 1900. Mary W. Whitney. *Pop. Ast.*, vol. VIII, p. 566.
53. Observations of Minor Planets (7), (324), (375), (42). Mary W. Whitney and Caroline E. Furness. *Ast. Nach.*, Nr. 3678.
54. Note on Sunspot. Caroline E. Furness. *Pop. Ast.*, vol. VIII, p. 149.
55. Catalog of stars within one degree of the North Pole. Caroline E. Furness. *Publications of Vassar College Observatory*, No. 1. June, 1900.
56. Photographic Catalog of North Polar Stars. Caroline E. Furness. *Pop. Ast.*, vol. IX, p. 1.
57. Observations of Minor Planets and Comets. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XXI, p. 116.
58. Observations of Nova Persei. Mary W. Whitney. *Pop. Ast.*, vol. IX, p. 574.
59. Observations of Minor Planets (270), (322), (17), (16), (78). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XXI, p. 160.
60. Observations of Minor Planets (27), (78). Alice Davis. *Ast. Jour.*, vol. XXII, p. 34.
61. Discovery and Observations of Minor Planet 1901 *GV*. Mary W. Whitney. *Ast. Nach.*, 3752.
62. Observations of Nova Persei. Mary W. Whitney and Caroline E. Furness. *Ast. Nach.*, 3767.
63. Prediction of Maxima and Minima of long period variables. Ida Watson and Helen Swartz. Published monthly in *Popular Astronomy*, vol. X.
64. Observations of Minor Planets (337), (372), (451), (196), (345), (247), (325). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XXII, p. 104.
65. Observations of Minor Planets (11), (385), (202), (384), (24). Mary W. Whitney and Caroline E. Furness. *Ast. Nach.*, Nr. 3795.
66. The Variable Star U Cephei. Ida Watson. *Pop. Ast.*, vol. X, p. 294.
67. Observations of Comet b, 1902. Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XXII, p. 195.
68. Observations of Minor Planets (354), (82), (356), (17), (347), (68), (103), (393). Mary W. Whitney and Caroline E. Furness. *Ast. Jour.*, vol. XXIII, p. 73.
69. Comparison stars for New Variable 4, 1903. Mary W. Whitney. *Pop. Ast.*, vol. XI, p. 428.
70. Determination of the Motion of the Solar System. Mary W. Whitney. *Pop. Ast.*, vol. XII, p. 226.
71. Determination of the Motion of the Solar System. II. Mary W. Whitney. *Pop. Ast.*, vol. XII, p. 311.
72. Observations of Minor Planets and Comets (24), (57), (113), (48), (46), (79), (386), (432), (478), (29), (324), 1903*a*, 1903*c*, 1904*a*. Mary W. Whitney, Caroline E. Furness and Elise C. Whitney. *Ast. Jour.*, vol. XXIV, p. 153.
73. Observations of the Maxima of Variable Stars. Ida Whiteside. *Ast. Jour.*, vol. XXIV, p. 197.
74. Observations of New Variables. Mary W. Whitney. *Ast. Nach.*, Nr. 4050.
75. Catalog of Stars within two Degrees of the North Pole. Caroline E. Furness. *Publications of the Vassar College Observatory*, No. 2. (Grant from the Carnegie Institution of Washington, No. 45.)
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